THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. VI. No. 118—9th YEAR.] LONDON, APRIL 28, 1857. [Subscription per Ann. 15s. in Advance / 18s. Credit. DOUBLE No., Price 1s. 4d.

CANNEL COAL.

RAMSAY'S NEWCASTLE CANNEL was discovered by the Advertiser in 1818. Cannel Coal was then little used in London: after surmounting much opposition, it has become the principal Cannel Coal used in the Metropolis, and has greatly assisted in improving the London gas. Its joint products of gas of high illuminating power, and coke of good quality, make it one of the most economical coals known. It is used by all the London Gas Companies, as well as by many Provincial and Foreign. The Crystal Palace was lighted from it in 1851, and the Post-office, Bank, and *Times* Office, are at present.

FIRE-CLAY RETORTS.

FIRE-BRICKS of all descriptions. Manufactory established in 1804.

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Bone and Artificial Manures of all kinds.

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April 27, 1854.

TO GAS ENGINEERS.

THE Newry Gas Consumers' Com-PANY (Limited) are about to erect GAS-WORKS, &c., in the town of Newry, County of Down, Ireland, and being desirous of proceeding on the most improved principles, invite communications from gas engineers who may feel disposed to design and superintend the works. The outlay is expected to be about £5000.

Communications, accompanied with reference, and testimonials as to works erected, to be addressed to the SECRETARY of the company, 28, Hill Street, NEWRY, up to the 1st of May next.

JOHN TREANOR, Secretary.

Newry, April 17, 1857.

PORTSMOUTH.—GAS-WORKS TO BE LET.

THE Portsea Island Gaslight Com-PANY will be prepared (on or before the 1st day of May next) to receive TENDERS for the MANUFACTURE of GAS for supplying the said Island from and after the 30th of June next.

The Works are most conveniently situated, and, being close to the water's edge, afford every facility for taking in Coals, &c.

A copy of the proposed Contract and Conditions may be seen at the Company's Office, PORTSEA, and all particulars obtained, in the first instance by letter, on and after the 20th of March next.

By order of the Committee of Management,
JAMES F. ABSALOM,
Clerk to the said Company.

Gas Office, Portsea, Feb. 14, 1857.

GAS COMPANIES

supplied with all the WORKING GAS BOOKS, GAS FORMS, &c., on the shortest notice. Also, SHARE CERTIFICATES and COMMON SEALS prepared in the best manner for all New Companies, by

CHARLES & ALFRED DOUBBLE,
REGISTRATION AGENTS,
LAW, PUBLIC COMPANIES, & MANUFACTURING STATIONERS,
14 and 15, SERJEANTS' INN, FLEET STREET, LONDON.

N.B.—List of Books, &c., sent post free on application.

WANTED, a good Working Fore-MAN or MANAGER for a country gas-work. He must be well acquainted with the manufacture and distribution of gas; the setting and management of clay retorts, with and without extractors; the laying and renewal of street mains and services; also with the detail of proving and fixing meters, interior fittings, and public lamps.

A moderate fixed annual salary will be given, and a 2½ per cent. commission on the net profits of the concern, with the use of a good house and garden, gas, water, firing, rates, and taxes free.

The present rental is about £1800 per annum, and is rapidly increasing.

Applications, post free, accompanied by references of actual service, only to be addressed to Mr. RICHARDSON, consulting engineer, DUDLEY.

Testimonials in the first instance are not required.

EASTBOURNE WATER-WORKS.—Contractors are invited to TENDER for the construction of a BRICK RESERVOIR; also, separately, for Providing and Laying about 2700 yards of MAIN, with Sluices, and other work. The lowest tenders will not necessarily be accepted. Plans and specifications to be seen at the office of Messrs. BIRCH, C.E., 3, Cannon Row, WESTMINSTER, on and after the 22nd inst.; and tenders addressed to WM. SIMPSON, Esq., 29, Saville Row, and marked "Eastbourne Water-Works," to be sent in on or before the 30th inst.

COWEN'S PATENT FIRE-CLAY RETORTS.

JOS. COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE.

Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE CLAY."

J. C. and Co. have been for many years the most extensive Manufacturers of Fire Clay Retorts in the United Kingdom; and orders for Fire Clay Retorts of all shapes and dimensions, Fire Bricks, and every other article in Fire Clay, are promptly executed at their works as above.

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Coal and Coke Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

FIRST PRIZE IN THE PARIS EXHIBITION.

JOHN RUSSELL AND CO.,
THE OLD TUBE WORKS,
CHURCH HILL, WEDNESBURY, STAFFORDSHIRE,
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas Tubes, and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam Boilers.

J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest Orders may be executed in a few days.

The eminent Engineer, Mr. Perkins, confines himself altogether to the use of John Russell and Co.'s Tubes in his High-Pressure Steam Patents.

Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.

N.B. All Goods thoroughly Tested before sent out, and Warranted.

CHARLES BOTTEN and SON,
ENGINEERS AND METER-MAKERS,
CRAWFORD PASSAGE, BAY STREET,
CLERKENWELL, LONDON (E. C.).

Manufacturers of Station and Patent Protector Consumers' Meters, Patent Slide-Valves, Gas-Fittings, Pipes, &c.

Also, High-pressure Cocks, Hydrants, Closets, and all Water-Fittings.

DINAS FIRE BRICKS, RETORTS, AND CEMENTS.

YOUNG & ALLEN,

MANUFACTURERS OF DINAS FIRE BRICKS AND RETORTS,
NEATH, GLAMORGANSHIRE,

Beg to draw the attention of the Engineers and Managers of Gas-Works to the superior quality of their goods, and more especially to their BRICK RETORTS, which, in addition to the almost infusible nature of the Fire-Clay employed, have the great advantage, from its large excess of Silica, of EXPANDING BY THE APPLICATION OF HEAT, and consequently becoming sounder and less liable to leak by use. Their cost is less than that of the ordinary Clay Retorts.

Young and Allen's DINAS FIRE-BRICKS and CEMENT have been long used for the linings of furnaces exposed to high temperatures, and are well known in the London and other Gas-works. They can be forwarded by rail to all parts of the United Kingdom, and shipped by sea to all parts of the world.

Prices on application as above.

TO WORKING GASFITTERS AND BRASS FOUNDERS.

THE Directors of the Sydney Gas COMPANY are desirous of engaging a COMPETENT WORKMAN to take the full direction and execution of the FITTING DEPARTMENT, including the MANUFACTURE of FITTINGS and BRASS CASTINGS. A middle-aged married man, without family, would be preferred, and an excellent character for sobriety is indispensable. The engagement will be for three years certain, at the current rate of wages in the colony, which are now 11s. 6d. per day, with lodgings, fuel, and light. The directors will pay the passage out to Sydney, subject to its being refunded by the person engaged, should he, from any cause whatever, quit the service of the company before the expiration of his engagement.

Applications to be made by letter in the handwriting of the applicant, with testimonials inclosed, to THOMAS G. BARLOW, Esq., 3, Parliament Street, LONDON, S. W.

BLAYDON BURN AND LOW BENWELL FIRE-CLAY RETORT AND FIRE-BRICK WORKS, NEAR NEWCASTLE-ON-TYNE.

WILLIAM COCHRAN CARR,

begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the Manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other Articles in Fire-Clay, executed on the shortest notice and on the most reasonable terms.

London Agents:
JAMES LAWRIE & CO.,
63, OLD BROAD STREET, CITY, LONDON.

WANTED, by the Tottenham and EDMONTON GASLIGHT and COKE COMPANY, a STATION-METER, Wet or Dry, capable of passing about 10,000 cubic feet per hour.

Full particulars, with lowest price, may be addressed to D. BARCLAY, Gas-Works, TOTTENHAM, N. D.

TO GAS COMPANIES.

WANTED by the Advertiser, who has been sixteen years engaged in the business, a situation as MANAGER of a small gas-work. He is thoroughly conversant with every matter connected with the manufacture of gas, understands the setting and working of retorts, and can produce good references.

Apply by letter to T. S., Post-Office, Arundel, SUSSEX.

EQUITABLE GASLIGHT COMPANY.
21, JOHN STREET, ADELPHI.

NOTICE is hereby given, that a HALF-YEARLY ORDINARY MEETING of the SHAREHOLDERS of the said Company will be held at this Office on TUESDAY, the 19th day of MAY next, to receive the reports of the directors and auditors, and to declare a dividend upon the capital of the company for the half year ending the 31st of December last; and to elect two directors and one auditor, in the place of the directors and auditor who will then go out of office, pursuant to the provisions of the act of Parliament for incorporating the company.

The directors and auditor who go out by rotation are eligible to be re-elected, and will offer themselves accordingly. The chair will be taken at one o'clock precisely.

Notice is hereby also given that the transfer-books of the said company will be closed on Monday the 11th, and re-opened on Tuesday, the 19th day of May next. By order of the Board,

April 28, 1857. SAMUEL ANDREWS, Secretary.

EDWARD RUSSELL,
ALMA TUBE WORKS,
WALSALL.

Manufacturer of Patent Welded Wrought-Iron Tube for Gas, Steam, and Water. Wrought and Cast Iron Fittings of every description. Stocks, Taps, and Dies. Core Bars for Ironfounders.

WILLIAM STEPHENSON & SON,
THROCKLEY,
NEWCASTLE-ON-TYNE,
MANUFACTURERS OF EVERY DESCRIPTION OF
FIRE BRICKS, CLAY RETORTS, LUMPS, TILES,
&c. &c.

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CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connections, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Boring.

PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas Works, in stock, on wholesale prices, at

LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground-street,
LONDON.

BRYAN DONKIN and CO.'s improved GAS VALVES have been adopted by numerous Gas Companies in England and abroad, and their advantages and great security fully proved. Very large numbers are in use. Prices from 11s. 6d. to 13s. 6d. per inch diameter.

BRYAN DONKIN and Co.,
Engineers, near Grange Road, BERMONDSEY.

NEWSPAPER PENNY

By Her Majesty's Royal Letters Patent.

JAMES MEACOCK,

MANUFACTURER OF

PATENT DRY AND IMPROVED WET METERS,

Also of every Description of Apparatus used in the Gas Factory, as well as in Gas Distribution.

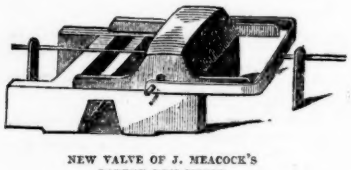
7, SNOW HILL, & GILTSPUR STREET, LONDON.

Established 1836.

PATRONISED BY ALL THE GAS COMPANIES OF THE METROPOLIS, AS WELL AS MOST OF THE PROVINCIAL TOWNS.

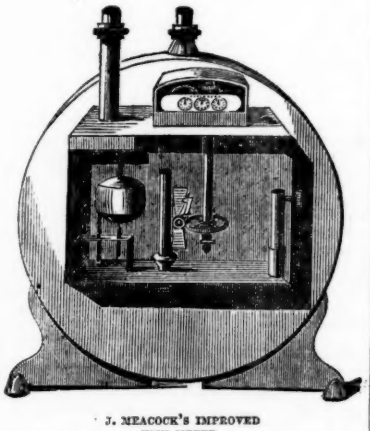
J. MEACOCK, in returning thanks for the liberal favours he has received, most respectfully calls the attention of those interested in Gas Lighting to the improvements of his DRY METER, which has obtained HER MAJESTY'S ROYAL LETTERS PATENT, and which contains all the desired requisites for simplicity, durability, and faithful registration; also to his improved WET GAS-METER, which all the leading Gas Companies have been pleased to patronise; and begs to solicit the continuance of their commands for the above, as well as *Experimental and Station-Meters*, Pressure-Indicators, Governors, Gauges, Photometers, and every apparatus in use by the Gas Engineer, which he will warrant of the very best materials and workmanship, and at most economical charges.

J. MEACOCK'S PATENT DRY METER.



NEW VALVE OF J. MEACOCK'S PATENT DRY METER.

OLD VALVE OF THE ORDINARY DRY GAS-METER.



J. MEACOCK'S IMPROVED WET METER.

In the above Diagrams of Meters will be seen J. MEACOCK'S patent method of securing the Leather Diaphragm of his IMPROVED PATENT DRY METER. Instead of using the soldering iron for the purpose, by which the Leather is more or less injured, it is held between two flat Metal Rings, and screwed up sound on to a frame to receive it, the outward rim of which and screw-heads are shown in the drawing.

The Valve adopted in the above Patent Meter is also shown, as well as the ordinary Slide-Valve; the advantages of the former in not rising from its facing will be very apparent to the practical Gas Engineer, to whom it is of vital import.

WET GAS-METERS REPAIRED AND RECONSTRUCTED WITH J. MEACOCK'S MODERN IMPROVEMENTS.

J. MEACOCK begs leave most respectfully to submit to the notice of Gas Companies his PATENT DRY GAS-METER, trusting thereby to receive the same encouragement that has been so kindly awarded him in respect of his Improved Water Meter, which has been patronised by all the Metropolitan Companies, as well as most of the Provincial Gas-works.

The public having been induced to desire Dry Gas-Meters in preference to Wet, and many Gas Companies being willing to yield to their wishes, if a correct measurer, not liable to fluctuation of registry, of good materials and workmanship, and when repair was necessary, of being put in order by simple means, J. M. has been induced to apply himself to the production of a Dry Meter, possessing those requisites, for which he has obtained her Majesty's Royal Letters Patent.

It is not generally known, but very frequently in fitting up the ordinary Dry Meter, the leather of the diaphragm is destroyed during the process of soldering, by coming in contact with the hot soldering iron. In his present process, J. M. has done away with its use, no solder being necessary, the leather being secured by two flat metal rings, between which it is screwed, rivetted, or overlaid; the perishing effect of hot tools to leather being avoided, its durability must be longer; also, by this means, its repair when needful is most simple, as a new leather diaphragm can be applied by merely unscrewing the old one from the rim or frame to which it had previously been screwed up sound.

In the ordinary Dry Meter frequent variations of registry have been detectable from defective valves, which tilt or rise from their facings: the slide-valve of this Patent Dry Meter will not allow any carbonaceous matter common to coal gas to tilt or lift the slide from its facings, and hence no variation. It will be found not only a correct measurer, but free from fluctuation.

The heavy wear and tear to which the Meters of Gas Companies are subject, have at all times made it desirable to have them of the best materials and workmanship. Unfortunately, in the greater number of the ordinary Dry Meters, neither of these requisites were carried out, for, as they were not to contain water, most inferior workmen and materials were employed in their construction. J. M. begs leave to assure those who may honour him with their commands, that nothing but the stoutest materials for cases, the hardest gas-resisting metals, and best foreign leather for the interiors, will be used, and none but first-class workmen employed in their construction (the properties which his Improved Water Meter is well known to possess, and which has obtained him that extensive patronage), will be strictly carried out in his PATENT DRY METER.

In respect of any orders with which he may be honoured, he is willing to give a stamped guarantee to keep the same in repair, *free of all charge*, for five years, and allow the customary discount off the original list price.

J. M. has annexed diagrams of his Patent Dry, also of his Improved Wet, Gas-Meter. In the former will be seen his patent mode of securing the diaphragm. The former and present valve are also shown, and the advantages of the latter will be, by practical persons, easily understood.

METERS SENT ON APPROVAL.

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TO CORRESPONDENTS.

N. W., Coatbridge.—*We purpose giving, in an early number, a description of the different processes used for utilising the ammoniacal products of gas-works.*

H. B. B., Lincoln.—*Take ground bones* . . . . . 45 *parts*
Sulphate of ammonia . . . . . 15 ,,
Sulphate of lime . . . . . 10 ,,
Nitrate of potash . . . . . 5 ,,
Boghead charcoal . . . . . 25 ,,
100

These, when ground together, will form an economical manure, but little inferior to Peruvian guano.

W. E. K.—*The patentee's price for oxide of iron, for the purification of gas, is 4s. per bushel in London; and may be used over again, 12 or 15 times, before it becomes surcharged with sulphur, purifying the same quantity of gas, or nearly so, at each operation, as dry lime. With these data you can calculate whether oxide will be cheaper to you than lime.*

NOTICES.

Subscribers who have not yet paid their subscriptions (1856) are requested to remit 18s. for the entire year, or 9s. for the half year, by Post-Office order, payable to Thomas G. Barlow, at the Charing-Cross Money-Order Office.

The subscription is 15s. per annum, if paid in advance, or 18s. on credit, payable in two sums of 9s. each, due in July and January of each year.

The next number will be published on Tuesday, May 12, and the subsequent numbers on each successive alternate Tuesday, till our project of weekly publication is carried into effect.

Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

All Communications to be addressed to the Editor, No. 3, Parliament Street, Westminster; and orders for Advertisements to Mr. W. B. King, the Publisher, No. 11, Bolt Court, Fleet Street.

ERRATA.

In consequence of the miscarriage of the author's corrected proof, several important errors occurred in Mr. Christie's article in our last on "Clay *versus* Iron Retorts;" to remedy which we have had the article reprinted in a correct form, and copies of it may be had by subscribers *gratis* on application, or will be sent through the post on receipt of a postage stamp.

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, APRIL 28, 1857.

NOTES UPON PASSING EVENTS.

THE interval between the dissolution and the re-assembling of Parliament has not been entirely neglected by the waste paper manufacturers, who indite reports for the benefit of butter shops, and the confusion of scientific inquirers. We have before us three of those singular documents lately issued; one upon the microscopical examination of the London waters, another upon the Post-Office, and a third professing to exhibit the changes which have taken place in the Thames since 1823. A heavy expense must have been incurred in the preparation and publication of these documents; and no doubt it is the intention of the Government to refer to them, especially to the one last named, in some of its future proceedings. On both scores, therefore, it is important that their real value should be examined.

As to the microscopical examination of the waters, all that need be said about it is, that it affords another illustration of the desperate efforts which will be made by the "hangers-on" of the General Board of Health to keep up an excitement, for the sake of retaining the pay and place they have so long enjoyed. Seriously, however, we ask why some independent Member of Parliament does not put a stop to this ridiculous farce of the "Reports under the Provisions of the Metropolis Water Act?" We have already had one trumpery chemical report, a disgrace to the philosophical and administrative character of the Government; and, lo! a parallel in the microscopical report. Trumpery we say they are, because it must be evident that the examination of waters, such as are sent into London houses, cannot lead to any practical useful result, unless it be carried on in the most consecutive manner, and after eliminating every possible disturbing cause. Yet, as in the case of the chemical examination (so called), the great dragon slayer, Dr. Hassall, only prints *accidental* observations—which, for ought the public knows, may have been carefully selected to suit his purpose—he gives no indication of the relative proportions of the organic matters he says he found to the water; whilst, although he himself suggests that, in the worst case he cites, "there must have been something wrong in the storeage," he does not seem to have taken any pains to discover what that something was, or where it existed. The beauty of the joke connected with these microscopical examinations is, that it requires an experienced eye, and an instrument of, we are afraid to say how many magnifying powers, to discover a creature with a name longer than that of his "talented" discoverer; and bottle of water after bottle of water must be strained or evaporated, before a sufficient crop of names can be got together to frighten the Mrs. Gamps of the daily press. Admitting, as may well be done, that all these microscopical monsters, with long names, were really found, what does it prove against the real quality of the waters?

The most convincing proof of the quackery of this microscopical examination is, however, to be found in the conclusions of Dr. Hassell's report. It is therein stated that the water of the Lambeth Company contains more microscopic animals than that of the Chelsea Company; that of the Southwark less than those of the Grand Junction and West Middlesex. Now, the Chelsea and Lambeth Companies draw their supplies from precisely the same point upon the Thames; the system of filtration is, as nearly as possible, identical; and the distribution takes place under the superintendence of the same engineer, Mr. J. Simpson. These remarks equally apply to the Southwark and Grand Junction waters, which are under the superintendence of Mr. Quick; and we are, therefore, convinced that the differences—if they really existed—were accidental. As to the superiority of the waters of the Lea and of the Ravensbourne over those of the Thames, Dr. Hassell does not bring forward sufficient evidence to warrant his or anybody's drawing a decided conclusion. On the days he examined the waters it probably was the case that the floods of the main valley had affected the Thames, whilst the affluents had escaped contamination. At other seasons of the year, especially in summer, the results would, no doubt, be very different; certainly, observations of this description can be of no use but to throw dust in the eyes of presidents or ministers, unless they are carried on under every modification of the flow of the rivers.

The Postmaster-General's third report contains, as might be expected, a repetition of the attack upon the railway companies, for their obstinate refusal to facilitate the arrangements of a branch of the public administration, which they feel to be acting in a spirit of very unfair competition with themselves. In the previous discussions which took place upon this subject, Mr. R. Stephenson, M.P., so satisfactorily refuted the casuistry of Mr. Rowland Hill, that the renewed attack may safely be commended to his notice. Our object in calling attention to the report is simply for the purpose of protesting against the sneers it contains against the reputation of Sir Robert Smirke, the architect to the building in St. Martin's-le-Grand, from our old friend Dr. Waller Lewis, who, by the way, does not seem to have improved in taste, or to have made much progress in the study of the English language, since we last had

the pleasure of analysing one of his productions. In the blue-book before us, Dr. Lewis does not, it is true, make such decided attacks upon Sir R. Smirke as he did lately at the Society of Arts; but the complaints, with respect to the bad ventilation and lighting of some rooms, evidently lead to the same inference, viz.: that Sir Robert had paid no attention to the sanitary conditions of those rooms. This is manifestly an unfair accusation to bring against a gentleman who, from his state of health and his retirement, is, to a certain extent, unable to defend himself; because the business of the Post-Office at the present day is so marvellously altered from that of the period when Sir R. Smirke designed the building, that it was utterly impossible for him to have foreseen what the requirements of 1857 could have been. It appears, from the blue-book before us, that the total number of letters which passed through the Post-Office in 1839 (the year before the introduction of the penny postage) was 82,470,596, whilst in 1856 not less than 112,856,029 were delivered in the London district alone. The business of the Post-Office having thus at least quintupled within the last 17 years, it is unjust to expect that a building designed with reference to the former state of affairs should be adapted to the latter; and if the vaults of the Post-Office be not adapted for the operations now carried on therein, the blame ought to attach to those who force the sorters &c., to work there, rather than to the architect, who evidently never meant those vaults to be so used.

There are some curious indications of the socialist tendencies of our administrators in the report of the Postmaster-General, to which we may perhaps hereafter return. In the meantime, we call the attention of thinking men to the subject; and to the propensity of all modern liberals to exaggerate "the principle of authority," at the expense of individual liberty. The elaborate organisation of the Post-Office *employés*, by Mr. R. Hill, is as striking an illustration of this anomaly as Mr. W. S. Lindsay's proposal for putting the officers of the commercial marine into livery. We seem fast drifting, amongst other follies, into the tailoring mania of our continental neighbours; but, if "the coat do not make the monk," it certainly will not make the sailor; so we recommend Mr. Lindsay to leave his captains at liberty to dress as they like. As to the Postmaster-General's parental care for his "sorters," we would remind him that he will really do them the greatest service by making them think for themselves, rather than by saving them the trouble of so doing. And why should the "sorters" only be thus carefully attended to?

Captain Burstal's report upon the bed of the Thames is marked by the same absence of philosophical knowledge of the subject he was employed to investigate, and the same manifest desire to subserve the purposes of the First Commissioner of Works, which we have already had occasion to signalise. Why are Mr. Page's soundings of 1846 deliberately ignored? They indicate such a peculiar phase in the *régime* of the Thames, that they ought to have been cited as one of the terms of the comparison it was intended to draw, unless there had existed a foregone conclusion on the part of the official white-washers of the First Commissioner's persecution of their author. It is curious that the soundings made by Mr. Page appear to indicate that the bed of the river was, at that period, in a very peculiar state of transition; and, indeed, as far as either of those sets of observations go (Mr. Page's or Captain Burstal's), there is positively nothing to warrant the assumption, which is at the bottom of Captain Burstal's report, that the site of the new Westminster Bridge is objectionable on the score of the changes in the river. But we protest against such a document as the latter being, under any circumstances, received as an indication of the normal condition of the bed. It may be, and no doubt was, a true representation of the bed when the soundings were taken; but the first flood, the first extraordinary tide, an unusual amount of steam-boat traffic, or the completion of a fresh length of quay wall, would upset the whole series of observations. To talk of the present condition of the bed of the Thames, upon faith of a few soundings taken at one particular period of the year, is about as wise as to talk of the flow of the tide upon faith of a few float tests—real "turnip tests," worthy of Mr. F. O. Ward's hydraulic philosophy; but to pretend, from such arbitrarily selected observations, to justify the abandonment of the Westminster Bridge, is neither more nor less than an insult to the common sense of the engineering profession. Most earnestly do we call the attention of the members of Lambeth to this gross specimen of special pleading and official casuistry.

We would ask Captain Burstal how it is likely that the bed of the Thames at Westminster Bridge can be materially lowered, so long as the bars actually existing at Southwark and Waterloo Bridges are retained? or what probability there is of the bottom of the deep water channels ever assuming a regular gradient between the depression opposite Nine Elms Pier and the Pool? Even if the bottom were so lowered, the close plates around the foundations of the new bridge would still be 6 feet below it; but until we have more scientific observations upon the tidal action of the Thames than any which are now before us, it is mere nonsense to discuss these questions, or even that of the embankment lately proposed to the Metropolitan Board. In the meantime, we repeat that this last expensive blue-book is a disgrace to the department from which it is issued, and almost as valueless as the Report upon the Disease in Cattle, lately issued by the General Board of Health, which is alluded to by one of our respected correspondents.

There has recently occurred an event at Preston to which we direct the indignant attention of engineers. It is this. Some time since Mr. Quick was consulted by the Local Board of Health upon Mr. Wrigg's system of water-supply, then in course of execution. Mr. Quick reported unfavourably, and of course a small civil war in the Local Board ensued thereon. In order to settle the dispute, Mr. Hawksley was invited to examine the whole question; and on Monday, April 13, a report from that gentleman was received, in which he substantially agreed with Mr. Quick. The Local Board met on Friday, the 17th, to consider Mr. Hawksley's report; yet in Saturday's *Builder* an advertisement appears from the Preston Local Board inviting applications from engineers to undertake their new works at a remuneration of 4 per cent. on the outlay. Of course no gentleman would reply to such an invitation; but we feel it to be our duty to protest at once against this system of, firstly, putting eminent engineers against one another, and then of putting up engineering duties to a money competition by a kind of Dutch auction.

We have very serious doubts indeed as to the morality of the fashionable system of competitions. No person of any note, or real eminence, can afford to waste his time upon such a risk; no person ought to be called upon to encounter the hazard of these intellectual lotteries. Tailors would not supply coats with the chance of being paid if they suited the whims of the proposed purchaser; and we cannot see why architects or engineers should be expected to waste their time and brains (their capital in fact) in case they should not please some unknown committee of taste. If the public require the ideas of a class of men who live by the sale of their time, the latter should be paid fairly for giving them. The modern fashion, we fear, only leads to jealousy and disappointment amongst professional men; or, worse still, to jobbery and intrigue. The occasions when it has produced satisfactory results are so very rare, that they must be considered the exceptions, not the rule; the unsatisfactory results have been in some instances so painful, that we may fairly take exception to the whole system.

The inquiry into the affairs of the Royal British Bank continues to display the laxity of morals which has of late prevailed in our commercial community. Mr. Deputy Dakin appears to have been fortunate enough to have escaped entanglement in this case; but the virtuous indignation of the *Times* against some of the proceedings of the British Bank, gives so much importance to some analagous proceedings which are said to have taken place amongst the directors of the gas company of which Mr. Dakin is chairman, that we naturally ask why that incorruptible censor does not inquire into them, and if they should be found really to have occurred, does not visit them with equal blame? It is tolerably well known, that, on December 7, 1849, the Common Council passed a resolution authorising the Great Central Gas Company to commence laying their pipes, when it should be proved that £75,000 had been paid into the bankers' hands. Six months elapsed, and shareholders were not forthcoming; however, on June 18, 1850, the bankers' pass-book was produced, showing that £75,000 stood to the company's credit. It is said that this was thus managed: The directors agreed to increase the number of their shares, giving their bills for the amount of the calls; these bills were discounted by the bankers, and the amount placed to the credit of the company. It was understood to have been arranged amongst the directors that these shares should be sold whilst the bills were running, and that if there were any loss on them the company should bear it. The shares went to a small premium, and it is believed that the patriotic directors did not refuse "to pocket the dif-

ference;" but wherein does this conduct differ from that of the Royal British Bank in its earlier stages? excepting always that the latter has failed, and that some of the *protégés* of the *Times* are still, we believe, upon the direction of the Great Central.

Unfortunately, this is not the only instance of the partiality and unfairness of the *Times*. The conduct of that journal in the matters of the Russian and of the Portuguese railways, is equally mysterious with its advocacy of the Great Central; and it is to be feared that it will be as mischievous to the public interests in the former case, as it has been in the latter. Its praise of the official twaddle of Messrs. Hassall and Bursal is as little to the credit of its editorial philosophy, as its recent monetary policy has been to its justice or perspicuity.

We beg to call, seriously, the attention of all persons connected with the manufacturing interests of the country to two well authenticated rumours. The first is to the effect that it is the intention of the Government to introduce, and force forward, a Bill for the re-constitution of the General Board of Health. The second is to the effect that the medical officers of the various Local Boards of Health of the metropolis, have agreed to a report upon the manner of conducting the manufacture of gas, for the purpose of forming the basis of a measure for its regulation. Admitting that gas manufacture does require some regulation, we ask whether a body of men, who cannot be supposed to know anything about its details, is the proper tribunal to which such questions should be submitted? And if once a particular branch of the trading interests of the country be handed over to the fancies of these theorists, who can tell how long his own occupation may escape their busy interference? Are we, in England, prepared for a copy of the French law of unhealthy trades?

Circular to Gas Companies.

THE return from gas-works, for which the late Mr. Brotherton moved in the last House of Commons, has been printed and issued to the public, and will be found in another column of our present issue. It will be seen that the application has been only partially responded to by the incorporated companies, and that several of those who have made returns are not provided with the requisite apparatus for complying with some of its requirements, especially in respect of the illuminating power of the gas supplied by them. For legislative purposes this return is practically without value, as we predicted would be the case, because it is notorious that the result depends entirely on the skill and care of the operator, and the mode in which the experiment is conducted. A clearer appreciation of the results will, however, be obtained by tabulating them in groups, on the principles we adopted in our issue for November, 1850, when commenting upon the returns obtained by the late Mr. Hume, and with this intention we have prepared the following abstract:—

Name of Town.	Cubic Feet per Ton of Coal.	Illuminating Power in Sperm Candles.	Mixtures of Coals used.
WIGAN CANNEL.			
Birkenhead	10,091	21 candles	Part com. coal.
Bolton	9,452	100 volumes require 144·6 of oxygen for combustion	Ditto.
Farnworth	9,825	—	—
Heywood	9,600	17 candles	⅓ common coal.
Liverpool	9,500 to 10,000.	Gas too rich to be consumed in a 5-ft. argand burner without smoking.	—
NORTHUMBERLAND AND DURHAM CAKING COAL.			
Beccles	9,000	13 candles	—
Brentford	9,200	11 to 12 do.	—
Brighton	9,450	13·5 do.	—
Brighton and Hove	9,420	13·5 do.	—
Cambridge	9,700	12 do. & upwards	—
Darlington	9,400	—	—
Devonport	10,000	14 do.	5 p. ct. Boghead cannel.
Exeter	9,200	—	—
Harrogate	8,000 to 9,000	11 to 15 do.	—
Hartlepool	8,700	—	—
Hastings	9,500 to 10,000.	12 do.	A portion of Ramsay's Newcastle cannel.
Isle of Thanet	8,550	—	—
Kingston-on-Thames	8,500	13 do.	—
London companies:			
Chartered	9,500	12 do.	—
Great Central	—	13·46 do.	—
Imperial	9,518	Above 10·2 do.	—
Phœnix	9,300	12·5 do.	—
Ratcliff	8,500	13·7 do.	—
South Metropolitan	9,395	14·2 do.	—
Plymouth	9,400	12 do.	—
Portsea	8,000 to 9,000	12 do.	—
Rochester	9,000	12·5 do.	—
Stamford	8,400	—	—
Sunderland	8,200 to 9,000	11 to 13 do.	—
DERBYSHIRE COAL.			
Birmingham	8,800	12·5 candles	—
Cheltenham	9,000	10 do.	Part Dean Forest.
Chesterfield	7,800	—	—
Derby	8,100	12 to 14 do.	—
Leamington Priors	8,000	13 do.	—
Leicester	8,400 to 8,500	13 to 14 do.	—
Lincoln	7,500	10 to 13 do.	Part Yorkshire.
Northampton	8,400	14 do.	—
Nottingham	7,800 to 8,200	12 to 15 do.	Part Yorkshire.
Oxford	8,500	15 do.	—
Stamford	8,300	—	—
Warwick	8,500	10 to 12 do.	Part Staffordsh.
Worcester	9,000	9 to 10 do.	Ditto.
YORKSHIRE COAL.			
Bradford	9,250	17 to 19 candles	Part cannel.
Dewsbury	7,500	14 do.	—
Great Grimsby	8,600	13·3 do.	—
Holmfirth	9,000	—	Part cannel.
Leeds (Old)	9,000	18 do.	Ditto.
Lincoln	7,500	10 to 13 do.	Part Derbyshire.
Nottingham	7,800 to 8,200	12 to 15 do.	Ditto.
Pudsey	9,000	16 do.	Half cannel.
Rotherham	7,500	11 do.	—
Scarborough	8,000	10 to 14 do.	Part cannel.
Sheffield	9,000	About 14 do.	—
Shipley	9,000	18·9 do.	¼ Drighlington cannel.
Wakefield	7,600	14 do.	—
LANCASHIRE CAKING COAL.			
Blackburn	10,400	16·5 candles	⅛ Boghead cannl.
Bolton	7,458 to 9,849	—	—
Rossendale	9,000	19·77 do.	Part Wigan canl.
St. Helen's	9,450	13·5 do.	Ditto.
Warrington	8,525	12 do.	—
CUMBERLAND COAL.			
Carlisle	7,000	15 candles	6 p.ct. Lesmahago cannel
GLOUCESTERSHIRE COAL.			
Bristol	7,000	13 candles	Part South Wales & Dean Forest.
CHESHIRE COAL.			
Glossop	9,500	12·5 candles	Part cannel.
Runcorn	9,000	14 do.	Ditto.
Stafford	9,000	10 do.	—
SOMERSETSHIRE COAL.			
Bridgwater	7,500	—	Part South Wales
Bath	7,730	11 to 12 candles	—
Weston-super-Mare	5,500	9 do.	Part South Wales
STAFFORDSHIRE COAL.			
Birmingham	8,800	12·5 candles	Part Derbyshire
Bilston	7,100	9·5 do.	—
Brierley Hill	6,400	—	—
Newcastle-un.-Lyme	7,000	10 do.	—
Warwick	8,500	10 to 12 do.	Part Derbyshire
Worcester	9,000	9 to 10 do.	Ditto.
SOUTH WALES AND FOREST OF DEAN COALS.			
Bridgwater	7,500	—	Part Somersetsh.
Bristol	7,000	13 candles	Do. Gloucestersh.
Cheltenham	9,000	10 do.	Do. Derbyshire.
Gloucester	9,000	8 to 9 do.	Dean Forest only
Weston-super-Mare	8,000	9 do.	South Wales only
Cardiff	9,500	10 do.	Part cannel.
Llanelly	5,000 to 8,000	—	South Wales only
Swansea	7,000	9 do.	Ditto.

Excluding Harrogate, where the high illuminating power of 15 candles from Newcastle coal is the result of the low product of 8000 feet per ton, the various descriptions of caking coals obtained in England and Wales, yield gas of the undermentioned illuminating power for the five feet argand burner.

	Minimum.	Maximum.
Northumberland and Durham	11· candles	14·2 candles.
Derbyshire	12· ,,	15· ,,
Yorkshire	11· ,,	14· ,,
Lancashire	12· ,,	12· ,,
Cheshire	10· ,,	10· ,,
Somersetshire	11· ,,	12· ,,
Staffordshire	9· ,,	10· ,,
Dean Forest	8· ,,	9· ,,
South Wales	9· ,,	9· ,,

The information to be gained by this return will, it is to be hoped, have the effect of showing to the chairman of the committee on unopposed bills the absurdity of attempting to force the same standard of quality into all gas bills; and we venture to submit to future legislative inquirers into the statistics of gas-works, that far more useful and practical information on the matter could be obtained by a return stating "the description of burner best adapted for the combustion of the gas required, to equal the light of (12) sperm candles, six to the pound, each of them consuming 120 grains of sperm per hour; and also the quan-

tity of gas consumed by such burner per hour to produce such light at the works of the company, in a chamber coloured dead black, and from which the light was excluded." Many of the discrepancies visible in the return just made would disappear before an examination thus rigorously conducted.

Correspondence.

THE WASTE OF AMMONIACAL PRODUCTS.

SIR,—Your remarks in the last number of the JOURNAL respecting the waste of "Ammonia," must, I think, come home to the heart of every gas manager in the United Kingdom, and with double force, if they consider how much they may have neglected in not giving more attention to the "utilisation" of this portion of their residual products, and whether they might not just have added a "per cent." or so to their yearly return, had they only devoted a moderate amount of attention to a subject interesting to all, and quite as important, in the long run, as the manufacture of the largest quantity of gas from a given quantity of coal. But they, perhaps, from the force of habit, little heed, if not almost forget, that there are other things contained in a lump of coal besides gas, and that some other products are the result of the use of improved clay or iron retorts; and that, although certain other compounds result from its distillation, and are to be found in the various portions of the apparatus provided for their reception, still they are considered to encumber the ground, and if not thought to be positive nuisances, are, in many instances, got rid of in the speediest and least objectionable way.

That a great quantity of ammonia exists in coal is a patent fact, and that a very minor portion of it is extracted and sold the accounts of nearly every gas company will testify; but now that you have called public attention to the unheeded circumstance that not only is it there, but that it may be cheaply obtained, and a good return got for it, we shall probably have many attempts, many failures, and some successes; and as I think it is the duty of all who have anything to do with gas-works to contribute suggestions, I venture to trouble you with my ideas on the subject, and to submit, for the consideration of those interested, such remarks as seem applicable to the case.

It is the misfortune of some people to neglect advantages just under their nose, and to run in search of other things more distant, but with that touch of enchantment about them which renders them so pleasant, but not so certain. The "ammonia" question is exactly in this phase:—The managers have been exclusive in their attentions to "cheap gas," and the greatest number of thousands to be got from a ton; and while they have produced highly satisfactory results in the gas return, they seem to me to have treated the contents of the "tarwell" with neglect; and I can only imagine the reason to be that its examination and adaptation involves a second process of manufacture not usually included in their education. But as the use of coal gas becomes even more extended than it is now, and the demand for it will involve questions of greater competition and greater attention, to keep pace with the requirements of the public, so will the solution of the cheap gas question be found not so much in the quantity of gas from a ton, as in the adoption of improved processes for rendering the "residuals" subservient to the wants of the agricultural community, and in the proper realisation of their commercial value. Until this be done, we must be content to go on as we are, and still to collect the ammonia water in wells, to evaporate it under fire-holes, and without caring where it goes to, or what becomes of it; only get quit of it, and be content. This state of things must have an end. But I will just ask you, Mr. Editor, if the directors of the gas companies themselves have not some little to do with this question? I think it will be admitted that the "mechanical" in gas engineering is gradually giving place to the "chemical," and as the popular belief has been (until recently) that any man could manage a gas-work, may not this in some measure account for the apathy to anything else but gas making? I do not mean to charge the majority of gas managers with ignorance of their profession, but I do know instances where men have been selected for these situations more from their interest with the "powers" than from any knowledge they might have of the constituents of coal, and the most scientific method of recovering all that was saleable in it.

The process of manufacture of "sulphate of ammonia" from "gas liquor" is so simple, and the apparatus so inexpensive, that any gas-work with an excess of that article in stock cannot be realising the best for its proprietors, nor can it be worked with that regard for economy which should be the characteristic of all public establishments. In your forcible remarks you say, "The ammoniacal liquor question is a worn-out tale;" but even if it be worn threadbare, there are but few gas companies, even now, who adopt any process of manufacture, or who seem to pay much attention to arrangements for the manufacture of "liquor" into a product, so easily and readily sold to the agriculturist, but which is rejected by him, and which he will not have at any price, as "ammoniacal liquor;" but offer it to him as "sulphate of ammonia," and he will readily buy it up, and consider it valuable. The very fact of a demand shows a necessity; and, knowing this, gas managers should at once take up the question, and adapt their existing apparatus, as far as may be practicable, for manufacturing the article now so much in request.

The extraction of the ammonia from the oxide of iron shows that it was present before it came to the purifiers, and that the intermediate apparatus did not arrest it properly. In most works they are provided with a "scrubber," and if it be used to its full extent they are subject to much inconvenience, as to how they are to get rid of the water after it has done its duty, and become saturated; if it runs into the tarwell, it speedily fills it up, and becomes a drug; if it is allowed to flow into the drains, it becomes a nuisance, and leaves the gas company at the mercy of any common informer who chooses to take up the matter. It is this that has prevented a more extended use of the scrubber; but that portion of the apparatus should now be made subservient to an improved system, and a valuable adjunct to the gas factory, instead of being, as now, comparatively unappreciated and unworked, for want of such arrangements as would enable it to produce results of a character suitable to the importance of the subject.

My attention has been for some years directed to this portion of the products resulting from gas making, and I have always been of opinion that some really practicable remedy was needed, and that it would only be taken up when the question was forced on the notice of the proprietors of gas-works. The time is fast approaching when accident in the management of gas-works must cease, and an essentially "chemical manufacture" be conducted with such appliances and such arrangements as will enable the most to be made of the material operated upon. It will not do in future to allow a portion of the results to be unheeded because means are unprovided to collect, economise, and make available certain constituents of the coal, and which must have existed, collectively and latently, before it was placed in the retort. The knowledge of the existence of such things should make all interested in the subject doubly anxious to arrive, in the first instance, at a sound and competent knowledge of the components of the raw material; and, in the second, to carefully watch the results, and not merely to be satisfied with a vague and cursory examination, but to trace out and follow through the various phases of decomposition and recomposition; and, finally, to ascertain why certain substances are found, and how and under what circumstances they are produced.

I should be glad to see special apparatus on all works for ammonia purification; but, under the present system of things, the scrubber appears to me to be the most applicable for such arrangement, inasmuch as the cost of adaptation would be but nominal; and I should propose that, instead of using water, as heretofore, that sulphuric acid, diluted with water or not, should be provided for the supply of the scrubber, and that cisterns should be arranged to supply and receive the partially saturated liquor as it comes over from the bottom syphon; tests should be applied, and arrangements made for pumping it up into the top cistern, and using it over and over again, until the acid be neutralised; it should then be transferred from the lower tank for the purpose of evaporation, and then packed in barrels for sale. By adapting the scrubber in this way one source of complaint against it is got rid of, and the waste liquid, instead of running into the drains and becoming a continual complaint, will be made a source of profit, and the means for preparing an article now eagerly sought for by the farmer; and not only will the companies, who seriously turn their attention to the matter be benefited, but it will also benefit the community at large by giving them purer gas, reducing its cost; and, finally, from the number of gas-works in the kingdom, and their facilities for supply, will, in many instances, tend to make two blades of grass grow where only one grew before. C. W. KERBY.

Nottingham, April 22, 1857.

IRON *VERSUS* CLAY RETORTS.

SIR,—In your valuable JOURNAL of the 14th inst., an article appears, under the title of "Clay *v.* Iron Retorts," which certainly has a startling aspect in the form of pounds, shillings, and pence, in favour of clay retorts, and, were such a statement practically true, I would advise every gas company in the world to use them; but the really practical gas engineer can smile at the statements which are so strongly set forth; and, in my opinion, they do fire-clay retorts great injury, as they only excite a desire in gas companies to inquire of surrounding companies who have already used them, and they will find the statements, at any rate, sadly exaggerated. I, for one, would like very well to know, for the information of gas engineers and companies, where or how fire-clay retorts could be made to last for ten years, under any system of setting, unless they are never heated at all, or are put under a glass cover to preserve them from damp; for I think I could name many which have been set by men who, I believe, have set many a hundred of them, which have not lasted ten weeks; for, alas! gas companies have suffered too much from these tender ware. I consider that experience is generally in favour of iron retorts, or fire-brick ovens, the durability of the latter (*many of them lasting for twelve and fourteen years and upwards, at an average cost of £3 per annum*) makes our great clay retort men blush. I have known fire-clay retorts set on what was called the best principle by the best men in London, where the gas company was hoping to make £100 more on their coke account, and to produce gas much cheaper than with ovens; but how far this was correct will be seen when I state that, instead of being £100 in pocket, they really were £100 worse off than before, and their coal

account £100 higher on account of the heavy leakage in the clay retorts.

In another town, not a hundred miles from the centre of Yorkshire, great wonders were to be done, and great savings effected, and dividends thrust into the pockets of the shareholders, by the use of fire-clay retorts. A great number of them were tried, but the last time I saw them little more than one half of them could work, as, on an average, two in every bed were broken and useless, and required as many stokers as if the beds were at full work; and those that were working were all patched and leaking, even with an exhauster at work, and an energetic and clever engineer to look after them.

I am trespassing on your valuable columns, but they could be filled with instances of this kind; and I have no doubt but that if in a few years, and in such a place as the metropolis, I or anyone else, who should wish to see a fire-clay retort, would find it only at the British Museum, and under a glass case.

Elland, April 21, 1857. R. Dempster.

A BOARD OF HEALTH JOB.

Sir,—As a tax payer, I should like to know what Mr. Simon, the medical officer of the Board of Health, is doing for his £1500 per annum, that he gets his friend Dr. Greenhow a job at *three guineas per day* as inspector of, and to write reports on, the diseases of cattle? I think Mr. Simon might do his own work for such an immense salary. J. W.

Westminster, April 15, 1857.

Register of New Patents.

2354.—William Bradford, of the City of Manchester, in the co. of Lancaster, brass founder and gasfitter, for "*Improvements in the arrangement of gas burners for lighting and ventilating.*" Patent dated Oct. 8, 1856.

This invention consists in a circular supply pipe, which has short branch pipes, of small diameter, radiating from it at intervals about an inch (or more or less) apart all round, the end of each short branch pipe, to which a burner is fixed, is bent upwards, so that each burner is in a vertical position; this arrangement allows the atmosphere a free, and, as far as possible, unobstructed access to each gas burner, and thus a better combustion of the gas is obtained. This arrangement of gas burner is suspended from the ceiling of the room, and under an opening, or the orifice of a pipe or channel, for conveying away vitiated air and products of combustion; between the opening or orifice for ventilating and the circular supply pipe of the gas burners, is placed an ornamental conical pipe, the smaller end of which rests on the circular pipe supplying the burners with gas; the sides of this conical pipe are perforated with holes or slits. Below, and from the centre of the circular pipe supplying the burners, a branch pipe descends, having arose or burner on the end of it, drilled for a series of horizontal gas jets. These jets are immediately under the ornamental conical pipe, and create through it a strong ascending current of air. The air surrounding the exterior ornamental conical pipe is drawn into the interior of it through the perforations or slits, taking with it the heated products of combustion from the burners on the short branch pipes which are on the exterior of the ornamental conical pipe.

The claim is for—

1. The arrangement of burners, on short branch pipes, from a circular distributing pipe; also, combining therewith, a rose burner, substantially in the manner hereinbefore described.

2. For pipes, placed above the burners, to convey away vitiated air or products from the combustion of the gas; not pipes in general, but only such as have their sides perforated with holes or slits, substantially as hereinbefore described.

3. The combination of such pipes as are referred to in the second claim, with such arrangement of gas burners as are referred to in the first claim, substantially as hereinbefore described.

2360.—Henry Watson, of High Bridge Works, Newcastle-upon-Tyne, brass founder, and John Dixon, of the same place, engineer, for "*Improvements in cocks and valves.*" Patent dated Oct. 8, 1857.

This invention consists in a method of arranging cocks and valves, so that they may, when left free, gradually stop the passage of the water, and thus prevent waste of water, without producing the injury to the pipes which results from the use of valves which close suddenly. The following is the arrangement of the apparatus:—A plug, or valve, works up and down in a chamber which it nearly fits, and on its underside is a facing of leather, metal, or other suitable material, which, when the valve is in its lowest position, comes in contact with a metal seat, and so closes the water way; but when the valve is raised (by a lever acting on the spindle of the valve) the water is able to pass freely. The spindle of the valve passes through a hole in the centre of a disc of elastic material so as to make a tight joint. When the valve is down, there is a vacant space in the upper part of the chamber in which it works which becomes filled with water, the valve not completely fitting the chamber; as the valve is raised by the handle the water is expelled from this space, and when the valve is left free it cannot descend until this space is refilled by water passing up between the valve and the sides of the chamber; and thus the descent of the valve is rendered gradual. It will be seen, that by increasing or diminishing the size of the spindle of the valve, the force with which the valve is pressed on to its seat can be adjusted.

The claim is for the mode herein described of combining the several parts of a cock or tap.

2435.—William Gossage, of Widnes, in the co. of Lancaster, chemist, for "*Improvements in the manufacture of coal gas, and for illuminating purposes.*" Provisional protection only obtained. Dated Oct. 17, 1857.

In the manufacture of gas by distillation from coal the crude coal gas produced contains (in addition to the gaseous compounds of carbon and hydrogen constituting coal gas proper for illumination) hydro-sulphuret of ammonia and sulphuretted hydrogen, which sulphurous compounds it is desirable to separate from the coal gas. This separating constitutes the process called purification, and the more effectually such separation is accomplished the more suitable is the gas produced for purposes of illumination. The separation of hydro-sulphuret of ammonia from coal gas is usually effected to some extent by simple cooling, and a product is thereby obtained, as "gas ammoniacal liquor," which contains hydro-sulphuret of ammonia in solution by water, but the coal gas still retains after this process much hydro-sulphuret of ammonia in the state of vapour, also sulphuretted hydrogen. The employment of hydrate of lime either in the state of powder or mixed with water, so as to form "cream of lime," is usually adopted to separate the last portions of hydro-sulphuret of ammonia from coal gas, and the whole or the greater part of the sulphuretted hydrogen is also thereby separated therefrom.

In effecting this invention the inventor also separates hydro-sulphuret of ammonia, from crude coal gas by cooling, and thereby obtains liquor containing hydro-sulphuret of ammonia, and completes the separation of the hydro-sulphuret of ammonia, and also effects the decomposition of sulphuretted hydrogen present in the crude coal gas, by the use of sulphurous acid either in the gaseous state, or dissolved in water. By the action of sulphurous acid in hydro-sulphuret of ammonia, contained in crude coal gas, sulphite of ammonia is produced, and an additional proportion of sulphuretted hydrogen is added to the crude coal gas; the further introduction of sulphurous acid into the crude coal gas occasions sulphuretted hydrogen present therein to become decomposed, thereby producing sulphur and water, which the inventor separates from the coal gas either by deposition or filtration, and he thus obtains sulphur as a valuable product, also sulphite of ammonia by the same operation, by which he deprives coal gas of injurious sulphur compounds.

Sulphurous acid can be obtained for such purpose by the combustion of sulphur with atmospherical air or oxygen gas, or by other well-known means; but it is preferred to obtain such acid by the decomposition of sulphite of ammonia, or some other alkaline sulphite, by means of sulphuric acid or other suitable acid.

The inventor also obtains sulphite of ammonia by decomposing hydro-sulphuret of ammonia, contained in gas ammoniacal liquor, by sulphurous acid gas in excess, and thereby causing sulphurous acid gas to become mingled with sulphuretted hydrogen gas, resulting from such decomposition, and producing sulphur and water by the mutual reaction of sulphurous acid gas and sulphuretted hydrogen gas.

In effecting this invention the inventor obtains considerable quantities of sulphite of ammonia, or other salt of ammonia in solution by water, and he concentrates such solution by passing the same through a lower, or cylindrical vessel, containing pieces of coke, or of other suitable material, through which a current of heated air is also passed, and he connects such apparatus with a chimney, and thus draws off the vapours passing therefrom.

PROVISIONAL PROTECTION

HAS BEEN GRANTED FOR THE UNDERMENTIONED PATENTS.

903.—Lambert Perin, engineer, Paris, 2, Rue Barbette, for "*The easy discovery of flaws and escapes in gas pipes.*" April 1, 1857.

953.—James Hansor, of Barnes, in the co. of Surrey, practical chemist, for "*Improvements in the apparatus for consuming gas.*" April 4, 1857.

1027.—Thomas Wilton, of Eastbourne, in the co. of Sussex, gas engineer, and John Huggett, of the same place, engineer and smith, for "*An apparatus for regulating the flow or supply of gas.*" April 11, 1857.

NOTICES HAVE BEEN GIVEN OF INTENTION TO PROCEED WITH THE UNDERMENTIONED PATENTS.

863.—William Ross, of Glasgow, N.B., plumber, for "*Improvements in apparatus for regulating the passage of fluids.*" March 27, 1857.

2932.—Joseph Chatwin, of Birmingham, Warwick, gas fitting and lamp manufacturer, for "*An expanding compensating slide for sustaining gas and other lights, also applicable for other similar purposes.*" Dec. 11, 1856.

2970.—John Grant, of Hyde Park, London, Esq., for "*Improvements in heating or cooking by gas, and in apparatus for effecting the same.* Dec. 15, 1856.

2975.—William Austin, of Upper Portland Place, Wandsworth Road, Surrey, civil engineer, for "*Improvements in pipes or tubes, and in the method of joining and laying the same.*" Dec. 16, 1856.

Dunstable.—The indignation of the gas consumers of this town has been recently excited by the issue of a circular from the lessee of the gas-works, announcing that the price of gas will be increased 5s. 6d. per 1000 feet from the 1st of July next. The following is a copy of the notice which has caused this sensation:—

Blackburn, April 20, 1857.

I hereby give you notice that on and after the 1st of July, 1857, the price for gas per 1000 cubic feet, to all consumers of gas at Dunstable, Bedfordshire, will be 12s. 6d.

All consumers of gas wishing to have the service pipes detached from their premises shall have their wishes complied with on application to Mr. C. Brothers, Gas-Works, Dunstable. Orlando Brothers.

The demand for gas having so increased as to exhaust the storing capabilities of the works early in the evening, and the company having failed in its negotiations with the lessee for the enlargement of the works, or the surrender of the lease, the latter has adopted the above somewhat novel mode of limiting the consumption to his means of supply; the company are, however, taking measures for erecting new works on an eligible site adjoining the railway, and they hope to be in a condition to supply the whole town by the 1st of September next.

PARLIAMENTARY RETURN FROM GAS-WORKS.

A Return of all Gas-Works established under Acts of Parliament in England *and* Wales, *and where situated; stating, in Columns, the Maximum Charge for* 1000 *Cubic Feet of Gas; the Minimum Charge per* 1000 *Cubic Feet; the Material used; the Average Number of Cubic Feet of Gas produced from a Ton of Coal; and the Illuminating Power of the Light produced from an Argand Burner consuming Five Cubic Feet of Gas per Hour, as compared with the Light produced from Sperm Candles, Six in the Pound, and burning One Hundred and Twenty Grains per Hour.*

(So far as the same have been received at the Home Office.)

Name of Gas-Works, and Where Situated.	Maximum Charge per 1000 Cubic Feet.	Minimum Charge per 1000 Cubic Feet.	Material used.	Average Number of Cubic Feet of Gas produced from a Ton of Coal.	Illuminating Power of Gas, as compared with Sperm Candles.
ENGLAND.					
Bath Gaslight and Coke Company, parish of Weston, county of Somerset.	4s. 6d. private consumers.	3s. public lamps.	Somersetshire coals.	7,730	11 to 12 candles.
Beccles Water and Gas Company, Suffolk.	6s.	5s. 6d.	Ravensworth, Pelaw, and Newcastle coals.	9,000	13 candles.
Bilston Gaslight and Coke Company; Works: Moxley, Staffordshire.	5s. 6d.	4s.	Bilston coal.	7,100	9½ candles.
Birkenhead and Claughton Gas and Water-Works.	5s. 10d.	5s.	Wigan cannel and other coals.	10,091	21 candles.
Birmingham Gaslight and Coke Company; Fazeley Street and Windsor Street, Birmingham.	4s. (*a*)	3s. (*b*)	Coal.	8,800	12½ candles.
Blackburn Gaslight Company, Lancashire.	4s.	3s. 9d.	⅛ Boghead cannel, and ⅞ Earl Balcarres Arley Mine coal	10,400	16½ candles.
Bolton Gas-Works.	5s. (*c*)	4s.	Cannel and coal	Cannel, 9,452; coal, from 7,458 to 9,849.	No apparatus for proving the illuminating power of the gas. The board are supplied with a report every month by H. H. Watson, Esq., analytical chemist; and the average result of 12 experiments during the year 1855 was, that 100 volumes of the Bolton gas required 144·6 of pure oxygen for combustion.
Bradford Gaslight Company.	4s.	3s. private consumers. 2s. 3d. public lamps.	Bett or bed coals, and cannel.	9,250	17 to 19 candles, varying according to the temperature of the atmosphere, the former being the average during the depth of winter, or during severe cold weather.
Brentford Gaslight Company; Works: Old Brentford, Middlesex.	7s. (*d*)	5s.	Coal.	9,200	11 to 12 candles.
Bridgwater Gaslight Company.	6s. to 7s. privt. consumers.	3s. 0½d. public lamps.	Bristol and South Wales coal.	About 7,500	Cannot say.
Brierley Hill District Gaslight Company, Staffordshire.	5s. 10d.	4s. 4d.	Thick coal.	6,400	No means of ascertaining.
Brighton Gaslight and Coke Company, Black Rock, Rottingdean, Sussex.	5s. (*e*)	5s.	Newcastle coal.	9,450	13½ candles.
Brighton and Hove General Gas Company; Works: Hove, next Brighton, Sussex.	5s. (*f*)	5s.	Newcastle coal.	9,420	13½ candles.
Bristol United Gaslight Company, 6, Bridge Parade, Bristol.	4s.	3s. 9d.	Coal from Coalpit Heath and Forest of Dean, Gloucestershire, and Cardiff and Newport, South Wales.	7,000	13 candles.
Bury St. Edmunds Gas Company.	10s.	6s. 8d.	Pelaw Main coal.	8,976	14 candles.
Cambridge Gas Company, Barnwell, near Cambridge.	5s.	5s.	Peareth coal.	9,700	Upwards of 12 candles.
Carlisle Gas Company.	4s. 2d.	3s. 4d. (*g*)	Cumberland common pit coal, screened nuts, or small coal, with about 6 p. ct. of Lesmahago cannel.	7,000	15 candles.
Cheltenham Gaslight Company.	5s.	5s.	Forest of Dean and Derbyshire coal.	9,000	10 candles.
Chesterfield Water-Works and Gaslight Company.	5s.	4s. 9d.	Coal.	7,800	—
Darlington.	5s.	3s. 6d.	½ caking coal from Auckland Valley, and ½ coal containing cannel, from Usworth, near Sunderland.	About 9,400	No provision for testing the exact illuminating power of the gas.
Derby Gaslight and Coke Company.	4s. (*h*)	3s. 2d. (*h*)	Derbyshire coals.	About 8,100	From 12 to 14 candles.
Devonport Gas and Coke Company, Offices: Keyham.	5s.	2s. 6d.	95 per cent. Newcastle coal; 5 per cent. Boghead cannel.	10,000	14 candles.
Dewsbury and Batley Gas Company, Yorkshire.	5s.	4s. 6d.	—	7,500	14 candles.
Exeter Gaslight and Coke Company.	5s. 6d. and meters supplied to consumers free of charge.	3s. 9d.	Newcastle or Hartlepool coal.	9,200	No means for measuring the intensity of the light.
Farnworth and Kearsley Gas-Works.	6s.	5s. 6d.	Cannel.	9,825	No means of furnishing this information.
Glossop Gas-Works, county of Derby.	5s. 10d.	3s. 9d.	Cannel and best coal.	9,500	12½ candles.
Gloucester Gaslight Company.	5s.	5s.	Forest of Dean coal.	9,000	From 8 to 9 candles.
Great Grimsby Gas Company, Lincolnshire.	5s. 5d.	3s. 6d.	Silkstone coal, from Barnsley, Yorkshire.	8,600	13·3 candles.
Harrogate Gas Company; Works: at Harrogate, Yorkshire, the same as Bilton-with-Harrogate.	7s. 6d.	6s. 6d.	Coal from Brancepeth, near Durham.	From 8,000 to 9,000	11 candles in winter. 15 candles in summer.
Hartlepool Gas and Water Company, situate at Hartlepool and West Hartlepool, county of Durham.	4s. 6d.	4s. 6d.	Caking coals, Hutton Seam.	About 8,700	The company do not possess the necessary testing apparatus.
Hastings Gas-Works.	5s.	3s. 8d. public lamps.	Newcastle caking coal, with a portion of Ramsay's cannel.	From 9,500 to 10,000	12 candles. No photometer.

(*a*) With 5 per cent. discount for prompt payment, being 3s. 9½d. per 1000 cubic feet, net.
(*b*) With 5 per cent. discount for prompt payment, being 2s. 10d. per 1000 cubic feet, net.
(*c*) No one is required to pay more than 4s. if the account be paid the first month in the next following quarter.
(*d*) This charge is made in country districts where the company have laid a large quantity of main-pipes, from which comparatively few lights are supplied.
(*e*) Street lamps, £4 per annum each. (*f*) Public lights, £4 per lamp per annum. (*g*) Town lamps under £3.
(*h*) If the consumption be under . . . . . 25,000 feet per ¼ year £4 0 0
25,000 and under . . . . . 50,000 „ „ 3 10 0
50,000 „ . . . . . 100,000 „ „ 3 8 0
100,000 „ . . . . . 200,000 „ „ 3 6 0
200,000 „ . . . . . 400,000 „ „ 3 4 0
400,000 and upwards 3 2 0

Name of Gas-Works, and Where Situated.	Maximum Charge per 1000 Cubic Feet.	Minimum Charge per 1000 Cubic Feet.	Material used.	Average Number of Cubic Feet of Gas produced from a Ton of Coal.	Illuminating Power of Gas, as compared with Sperm Candles.
ENGLAND (*continued*).					
Hereford Gaslight and Coke Company, city of Hereford.	6s.	5s. 2d. for the railways, as they are the largest consumers.	Coal from Ruabon, Flintshire, at 14s. 2d. per ton.	Not having a station-meter we have no means of ascertaining.	We have not the necessary apparatus required for testing the illuminating power as compared with candles.
Heywood Gaslight and Coke Company, near Manchester.	5s.	3s. 9d.	Two-thirds cannel and one-third coal.	9,600	17 candles.
Holmfirth Gas-Works.	6s. 8d.	5s.	Cannel and best house coal mixed.	9,000	No means of testing the illuminating power accurately; judged to be from 12 to 14 sperm candles.
Isle of Thanet Gas Company: Ramsgate.	7s. 6d. at an adjoining village.	6s. at Ramsgate.	Newcastle coal.	8,550	—
Margate Gas-Works.	6s.	6s.	Newcastle coal.	8,550	—
Kingston-upon-Thames; Gas-Works: Lower Ham Road, Kingston, Surrey.	6s. 8d.	6s.	New Pelton, and other Newcastle coals.	8,500	13 candles.
Leamington Priors Gaslight and Coke Company, county of Warwick.	5s.	4s. 9d.	Derbyshire coal.	8,000	13 candles.
Leeds Gaslight Company; Works: 70, York Street, Leeds.	4s. 6d.	3s. 1½d.	Cannel and coal.	About 9,000	Average about 18 candles; has been found 20 candles.
Leicester Gaslight and Coke Company, in the borough of Leicester.	4s. 8d.	3s. 9d.	Derbyshire coal.	8,400 to 8,500	13 candles in winter. 14 candles in summer.
Lincoln Gaslight and Coke Company.	4s. 2d.	4s. 2d.	Silkstone coal from South Yorkshire, and Renishaw coal from North Derbyshire.	7,500	10 candles in winter. 13 candles in summer.
Liverpool United Gaslight Company.	4s. 6d. to consumers residing beyond the Parliamentary borough of Liverpool.	4s. to consumers residing within the Parliamentary borough of Liverpool.	Wigan cannel coal.	9,500 to 10,000	The quantity of 5 cubic feet of the quality of gas manufactured by this company cannot be burned in an ordinary Argand burner without producing smoke; and the Argand burner is not used in Liverpool.
London—					
Gaslight and Coke Company, commonly called the "Chartered Gas Company," Horseferry Road, Westminster; Brick Lane, Old Street; Curtain Road, Shoreditch.	4s. 6d. Newcastle, 6s. cannel gas	4s. in the City of London.	Newcastle coal and cannel coal.	Average, 9000 feet from Newcastle; 10,000 cannel coals.	5 feet Newcastle gas equal to 12 candles; 5 feet cannel gas equal to 26 candles.
Great Central Gas Consumers' Company; Works: Bow Common.	4s.	4s.	The company do not manufacture, but purchase their gas at a contract price from Mr. A. A. Croll, to whom their works are leased.		13·46 candles.
Imperial Gaslight and Coke Company; Stations of works: Maiden Lane, St. Pancras; Great Cambridge Street, Hackney Road; Sandy End, Fulham; Ann's Place, Bethnal Green.	4s. 6d.	4s. 6d.	—	9,518	Illuminating power is never under the standard of 12 wax candles prescribed in the last act of Parliament, equal to 10·2 sperm candles.
Phœnix Gaslight and Coke Company, of London.	For a small part of country district, 5s. 6d. (*a*)	For public lights, 3s. 3d.	Newcastle coal mixed with cannel.	9,300	12½ sperm, 14½ wax candles.
Ratcliff Gaslight and Coke Company, New Crane, Wapping, Middlesex.	4s. 6d.	4s.	Coal.	8,500	13·7 candles.
South Metropolitan Gaslight and Coke Company, Old Kent Road.	5s. 6d.	4s. 6d.	Coal from Newcastle-on-Tyne.	9,395	14·2 candles.
Macclesfield Gaslight Company.	4s. 6d. (*b*)	3s. 9d.	Cannel coal.	Variable.	—
Newark, county of Nottingham.	5s. 10d., 5s. 5d., 4s. 7d., according to quantities of gas consumed.		Coal from the Yorkshire and Derbyshire coal-fields.	Unable to answer with due accuracy to these questions, having no station-meter or other instrument necessary to ascertain such results.	
Newcastle-under-Lyme Gaslight Company, Staffordshire.	5s.	5s.	Common coal.	7,000	About 12 candles.
Newton Improvement Commissioners; Gas-Works situated at Newton, in Mackerfield, otherwise Newton-en-les-Willows, in the county of Lancaster.	Uniform charge of 6s. The gas committee has authority to enter into special contracts. The gas has been introduced a very short time only, and no special contract has, as yet, been entered into.		The best cannel coal, from the Wigan coal field.	The Improvement Commissioners do not manufacture their own gas, but contract with a private individual for the supply of the same for public and private consumption. They are, in consequence, unable to ascertain the quantity of cubic feet of gas produced by one ton of coal. The commissioners have not the expensive apparatus necessary to enable them to ascertain the illuminating power of the light; and, moreover, the manager of the works of the contractor is not a scientific man.	
Northampton Gaslight Company.	5s. uniform, but with a discount of 10 per cent. to customers whose accounts exceed £60 per annum.		Coal.	8,400	14 candles.
Nottingham Gaslight and Coke Company.	3s. 9d.	3s. 2¾d.	Best soft coals of Derbyshire, Nottinghamshire, and Yorkshire.	7,800 to 8,200	12 to 15 candles.
Oxford Gaslight and Coke Company.	5s.	5s.	Coal.	8,500	15 candles.
Plymouth and Stonehouse Gaslight and Coke Company.	6s.	4s. 6d.	Newcastle coal and cannel coal.	9,400	12 candles.
Portsea Island Gaslight Company.	5s. 6d.	5s. 6d.	Ordinary Newcastle gas coal, with some portion of cannel coal.	From 8,000 to 9,000	12 candles.
Pudsey Gaslight Company.	6s.	3s. 7d.	Half cannel coal and half black bed.	9,000	16 candles.
Rochester, Chatham, and Strood Gaslight Company.	5s.	10 p.ct. on large payments.	South Pelaw Newcastle coal.	9,000	12½ candles.
Rossendale Union Gas Company (comprising Bacup, Newchurch, Rawtenstall, Waterfoot, Boothfold, &c., all in the Forest of Rossendale).	5s. 3d.	4s. 6d.	Wigan cannel and Wigan coal.	9,000	19·77 candles.

(*a*) The standard price is 4s. 6d., at which three-fifths of the gas sold is charged, free from meter-rent. The leakage and waste varies from 25 to 30 per cent.
(*b*) When the half-yearly consumption is under 25,000 . . . . . 4s. 6d. per 1000 feet;
25,000, and under 250,000 . . . . . 4s. 3d. ,,
250,000 and upwards . . . . . 3s. 9d. ,,

Name of Gas-Works, and Where Situated.	Maximum Charge per 1000 Cubic Feet.	Minimum Charge per 1000 Cubic Feet.	Material used.	Average Number of Cubic Feet of Gas produced from a Ton of Coal.	Illuminating Power of Gas, as compared with Sperm Candles.
ENGLAND (*continued*).					
Rotherham Gaslight and Coke Company.	4s. 7d.	3s. 4d.	Park Gate coal.	7,500	11 candles.
Runcorn Gas-Works, Cheshire.	6s. 3d.	6s.	Cannel and coal mixed.	9,000	14 candles.
St. Helen's Gas-Works, Lancashire.	5s.	5s.	Half cannel and half coals.	9,450	13½ candles.
Scarborough Gas Company, North Riding of the county of York.	5s. 10d.	5s. 10d.	West Riding cannel and common coal mixed together.	8,000	10 to 14 candles.
Sheffield United Gaslight Company, Sheffield.	4s.	3s. 6d.	Best South Yorkshire coal.	About 9,000	About 14 candles.
Shipley Gaslight Company, near Bradford, Yorkshire.	5s.	3s. 6d.	One-fourth Drighlington cannel, and three-fourths Halifax soft bed.	About 9,000	18·9 candles.
Shrewsbury Gaslight Company.	5s.	3s. 6d.	Coals and cannel; average cost, 15s. per ton.	7,500	No means at present of ascertaining.
Stafford Gas-Works, Stafford.	5s. 6d.	3s. 6d.	Coal slack, from Ashton-under-Lyne.	9,000	About 10 candles.
Stamford and St. Martin's, Stamford Baron, Gaslight and Coke Company	6s. 8d. to all consumers.		Newcastle coal. Derbyshire coal.	8,400 8,300	—
Stockton-on-Tees Gas-Works.	7s. 6d.	4s. 6d.	Whitworth Park coals, as drawn from the pit.	Not having a station-meter, cannot say.	Unknown; never tried.
Stourbridge Gas-Works.	6s.	4s. 6d.	—	—	Have no means of accurately ascertaining.
Sunderland Corporation Gas Company.	3s. 9d.	3s.	Good gas coals from the best seam of the Durham coal-fields.	From 8,200 to 9,000	From 11 to 13 candles.
Surrey Consumers' Gas Company, Rotherhithe Street, Surrey.	(*a*)	Present charge, 4s. 6d.	The company contract for the gas which is made and sold to their consumers, and they are unable to answer the questions which relate to the manufacture.		The illuminating power of the gas supplied is in accordance with the Parliamentary standard, which provides that a 15-hole Argand burner, consuming 5 cubic feet of gas per hour, shall be equal to 12 wax candles, burning 120 grains per hour.
Wakefield Gaslight Company, in the West Riding of the county of York.	4s. to all consumers.		Black coal.	7,600	14 candles.
Warrington Gaslight and Coke Company.	5s.	4s. 6d.	Common coal.	8,525	12 candles.
Warwick Gaslight Company.	6s. 3d.	5s. 4d.	Derbyshire and Staffordshire coals.	8,500	10 to 12 candles.
Wells Gaslight Company.	6s. to private consumers; about 4s. 3d. for public lamps.		Somersetshire coal.	8,000	—
Weston-super-Mare Gaslight Company.	6s.	5s. 6d.	Coal, partly from Newport, Monmouthshire, and partly the Somersetshire	Newport, 8,000; Somersetshire, 5,500.	9 candles.
Worcester Gas-Works.	6s. to private consumers; 3s. 7d. to public lamps.		Staffordshire and Derbyshire coals.	9,000	Average, 9 to 10 candles. Vary winter and summer.
WALES.					
Bangor Water and Gas Company.	6s.	6s.	Cannel coal.	10,000	8 candles *
Cardiff Gaslight and Coke Company.	4s. 3d.	3s. 6d.	Cannel coal mixed with other coal.	9,500	10 candles.
Llanelly Gas-Works, county of Carmarthen, South Wales.	6s. 8d.	4s.	Bituminous coal from the neighbourhood.	From 5,000 to 8,000	Not known.
Swansea Gaslight Company.	5s.	5s.	Mynydd Bach-y-Glo Colliery coal.	About 7,000	9 candles.
IRELAND.					
Dublin—					
Alliance and Dublin Consumers' Gas Company.	5s. 10d.	5s. 4d.	Newcastle and cannel coal, the latter in the proportion of 1 to 5.	9,000	14 candles.

(*a*) The company's act of incorporation (17 and 18 Vict., c. 94) fixes the maximum charge at 6s.

* NOTE.—This is probably a typographical error, and intended for 18.—(ED. J. G. L.)

Legal Intelligence.

COURT OF EXCHEQUER.

APRIL 21, 1857.

(Sittings *in Banco*, before the LORD CHIEF BARON and Barons MARTIN, BRAMWELL, and CHANNELL.)

HILLS *v.* THE LONDON GASLIGHT COMPANY.

The LORD CHIEF BARON read his notes of the trial, and in the course of so doing observed, with reference to the deposit paper: It may be that the paper deposited with the Attorney-General, if it was inconsistent with the subject of the specification, would probably show that he had not specified the invention.

Sir FREDERICK THESIGER: My lord, with regard to that deposit paper, I think the question would hardly arise before your lordships, because the object of adverting to that deposit paper was to show that the plaintiff, at the time when he applied for his patent, was not aware of Laming's invention. That would, of course, be a question for the jury. I mention it merely to relieve your lordships from the consideration of that part of the case.

Mr. GROVE: I do not recollect that it was reserved.

Sir FREDERICK THESIGER: I contend on that deposit paper it appeared that the plaintiff had not known of the invention.

The LORD CHIEF BARON: I am not sure of that; I will put a case which occurred to me when I was Attorney-General, and which I have mentioned, I believe, on other occasions. A patent agent desired to take out a patent with this title, "For an Improvement in Locomotion." I would not permit it; I said, "As Attorney-General, I will not allow so vague a title to be used, because by taking out a patent under that title you may improve anything from a steam-engine to a walking stick, or from a balloon to a pair of skates." There is no implement that is used for assisting in motion that would not come in under the title—"An Improvement in Locomotion." Suppose that I had allowed him to take out a patent with that title, and said, "As the title is so general I desire that you will make a memorandum, to be deposited here, of what your invention consists;" and he were then to say, "My invention consists in the improvement of locomotion, by the application of a newly discovered principle in the mode of constructing a steam-engine, by way of assisting people on railways;" and when he came to specify, he abandoned everything about railways and steam-engines, and specified a discovery of something for navigating a vessel by steam, that would be totally different. I think that would not be a question for the jury. I think the court would say, "It is manifest you do not want to send this to a jury; it is all in writing; here is a memorandum showing that the patent is taken out with reference to a steam-engine, and the thing specified is something that relates to an ordinary sailing vessel." I do not recollect what the paper was; for anything I know, it may be something of the same kind. Either Laming's patent or Croll's patent uses carbonate of iron, certainly.

Sir FREDERICK THESIGER: Both use oxide.

[The Lord Chief Baron then concluded the reading of his notes.]

The LORD CHIEF BARON: I ruled that the plaintiff's patent could not be sustained, Laming having previously pointed out the use of the article. In Laming's patent there is this passage, which I now read: "Another part of my invention consists in the use of carbonate of iron for the purification of coal gas." This specification was enrolled on May 4, 1848, and the specification of the plaintiff was not enrolled till May 28, 1850.

Mr. GROVE: There was a disclaiming specification after Hills' patent.

The LORD CHIEF BARON: There may be some mistake in what I have got before me, but what I was going to read from is what has been handed up as the specification and disclaimer of Frank Clarke Hills.

Sir FREDERICK THESIGER: The fact is that the disclaimer of Hills was not enrolled until three years after it was granted.

The LORD CHIEF BARON: The specification says patents were granted November 28, 1849, therefore the specification in May, 1850, is right.

Sir FREDERICK THESIGER: It is the last day of the six months.

The LORD CHIEF Baron: Laming's patent is granted November, 1847, and the specification is May, 1848, therefore Laming's specification is two or three years before Hills.

Mr. GROVE: A little more than a year.

Sir FREDERICK THESIGER: His patent is two years before Hills.

The LORD CHIEF BARON: What I wish to call the attention of the court to is the specification of Hills, the plaintiff, as to the purification. It is this: "My improvements in the purification of gas, and in obtaining certain products, consist of a method of purifying it from sulphuretted hydrogen, cyanogen, and ammonia, by passing it through the following porous material, and of renovating the material employed after it has become inert, and of obtaining the sulphur, cyanogen, and ammonia (either alone or in combination), which were contained in the gas. I effect this in the following manner:—I take the subsulphates, the oxychlorides, or the hydrated or

precipitated oxides of iron (which I prefer to use in rather a damp state either by themselves, or mixed with sulphate of lime, or sulphate or muriate of magnesia, baryta, strontia, potash, or soda, and absorb them into, or mix them with, sawdust or peat charcoal in coarse powder, or breeze, or other porous or absorbent material, so as to make a very porous substance, easily permeable by the gas. This material is to be put into a purifier (such a one as is used for dry lime answers the purpose), and the gas is to be passed through it, whereby the gas will be deprived of its sulphuretted hydrogen, cyanogen, and a part of its ammonia, which will be absorbed into the porous material, water being at the same time formed by the union of the oxygen of the oxide and the hydrogen of the sulphuretted hydrogen absorbed. As soon as the material ceases to purify the gas from sulphuretted hydrogen, the gas is to be shut off from the purifier, and a communication is to be opened to the external air, which is to be admitted to the purifying material, and by the agency of which it will be renovated, and the uncombined gases which have been absorbed will be driven off. The best way to effect this is partially to take off the atmospheric pressure at the top or bottom of the purifier in which the purifying material is contained, by connecting it with a pipe to a hot and powerful chimney, or to an exhausting apparatus, so as to cause a current of air from the opening in the purifier communicating with the external air to pass through the purifying material. The current of air will drive off the volatile gases which have been absorbed into the purifying material from the gas, but which have not united with the purifying material, consisting principally of ammonia, and of some sulphuretted and carburetted hydrogen. The air will at the same time re-oxidize the iron of the sulphuret of iron which has been formed, and sulphur will be precipitated, and a small, but variable, quantity of sulphuric acid will be formed." Then, further on, he says:—"Hydrated or precipitated oxides of iron may be conveniently prepared for these purposes by decomposing sulphate or muriate of iron with hydrosulphuret of ammonia, or with lime, magnesia, potash, or soda; they may then be absorbed into, or mixed with, sawdust, peat charcoal, or breeze, or other such material, and afterwards exposed to the air." Then he claims: "Thirdly, the purifying coal gas from sulphuretted hydrogen, cyanogen, and, more or less, perfectly from ammonia, by passing it through the precipitated or hydrated oxides of iron, or the subsulphates or oxychlorides of iron, from whatever source obtained, either by themselves, or, which is much better, made into a more porous material, by being absorbed into, or mixed with, sawdust, or breeze, or peat charcoal in coarse powder, or other porous or absorbent material, so as to be readily permeable by the gas; and either used alone or mixed with sulphate of lime, or sulphate or muriate of magnesia, potash, or soda, or in conjunction with any other purifying material at present in use for a similar purpose. But I do not claim the peroxides of iron or manganese made at a red heat, or the oxide of iron mixed with chloride of calcium, or with the muriates and sulphates of manganese, iron, and zinc, and absorbed into sawdust," &c. He claims: "Fourthly, repeatedly renovating, or re-oxidising, the said purifying materials by the action of the air whenever they, from time to time, cease to absorb sulphuretted hydrogen, so that they may be used over and over again to purify the gas." In Laming's patent, taken out one or two years before, there is this: "Another part of my invention consists in the use of the carbonates of manganese, iron, zinc, and lead, for the purification of coal gas, for which purpose I damp them, and dispose them, mixed or unmixed with sawdust, or other matters, in the course of the gas, as is practised with the hydrate of lime; or I mix them with the purifying matters, which I have claimed as my invention, or with other purifying matters hitherto in use for a similar purpose, in a state of mechanical division. To obtain these carbonates in an economical manner, I throw down from ammoniacal, or gas liquor, obtained in making coal gas, and previously distilled or not, the sulphur which it contains, and, having drawn off the clear liquid, I next precipitate its carbonic acid, or, instead of making two separate precipitates, I throw down a mixed sulphuret and carbonate of the precipitant, or precipitants. I prefer to precipitate by means of a muriate or sulphate of manganese, iron, zinc, or lead. I do not claim either of these ways of obtaining a metallic carbonate, but I claim the use of the carbonates above-named, however obtained, for the purification of coal gas." Carbonated oxide of iron being the common name of Apothecaries' Hall, the commercial name of the hydrated oxide of iron is carbonate of iron.

Mr. Grove: We say quite a different thing. We say that one, by a certain process, that is, heat and long exposure to the air, comes to the other. That will be substantially the point. The witnesses said that, if you expose it to air or heat, it (the carbonate) changes to hydrated peroxide. It would invariably do so, if exposed.

Mr. Baron Channell: I understood him to object to use it, not as a scientific description, but as intimating that the substance was not precisely the same.

The Lord Chief Baron: Did I call up Dr. Taylor again?

Mr. Grove: No, my lord; that is one of the grounds upon which my learned friend Mr. Knowles moved the court. Your lordship will, perhaps, recollect that, having obtained his rule on the first day, he came back the second day, and said he had a further point, in consequence of your lordship not having allowed him to call back Dr. Taylor in order to explain the terms in Laming's patent. Your lordship said he had given a full explanation of the meaning of the term "carbonate of iron." I did not hear your lordship read the re-examination. What Dr. Taylor says is, that the carbonate of iron became peroxide by not being properly kept.

The Lord Chief Baron: He says there is a carbonate of iron, but it is a misnomer of hydrated oxide of iron when called carbonate of iron.

Mr. Baron Channell: One of the defendants' witnesses says it is the same.

Sir Frederick Thesiger: Mr. Warrington, the manager of Apothecaries' Hall.

Mr. Grove: The explanation which he gave in re-examination was that the carbonate of iron, by being improperly kept, became peroxide: so that if a man went to a chemist's shop to buy carbonate, he would get peroxide: not that carbonate and peroxide were the same things, but that, in consequence of exposure to the air changing its nature, if a person went to buy carbonate, he would get peroxide of iron in all probability.

Mr. Baron Bramwell: I understand my lord's note to be this:—that there could not be such a chemical product as carbonate of iron. I understand him to say that, practically, there is no such thing; there is a thing that goes by that name, but it is really hydrated oxide of iron.

Mr. Grove: Only that the chemist does not keep it well.

Sir Frederick Thesiger: I think Dr. Taylor distinctly said that hydrated oxide of iron was formerly called carbonate of iron, and was known for many years by that name.

Mr. Grove: But he explained that afterwards by saying that there is a real carbonate, and that carbonate changes. Your lordships will see, when I read his re-examination, that he says, if you go to a chemist's shop and ask for carbonate, they will sell you peroxide.

Mr. Baron Channell: You cannot keep it in a state of carbonate of iron.

Mr. Grove: There is no doubt of there being a real carbonate.

The Lord Chief Baron: There is no doubt about that, but it is so little known that the substance is not known by that name.

Mr. Grove: The preparation makes the carbonate that is sold in every druggist's shop. This is the re-examination of Mr. Warrington: "Any chemist who read this specification, and had to carry it out, I should imagine would understand that it must be dried. I cannot imagine that either Mr. Laming or any patentee would use it in the wet state. The precipitate would be a wet material, that could not be carried about except in buckets. Even if it were mixed with sawdust, I should say it would certainly require to be dried, in order to be moved about from place to place to be put in the purifiers. I do not see how the thing could be manipulated without being brought to a dry state."

The Lord Chief Baron: I must say that it occurs to me, as it did at the trial, that it was perfectly well known from Laming's specification that he uses carbonate of iron.

Mr. Grove: With great deference, my lord, there was no evidence of any user of this part of Laming's patent. That was one of our grounds in moving for the rule. The portion which refers to the prior user was a prior user of what was alleged to be Hills' process—not the carbonate of iron as specified here.

The Lord Chief Baron: My nonsuit went upon this ground: that, whereas Laming had, in the year 1847, taken out a patent, and, in the year 1848, specified that he could use carbonate of iron mixed with sawdust, for the purpose of purifying gas, you take out a patent for that very same thing, but you call it hydrated oxide of iron. The carbonate of iron of commerce—not of the laboratory, or the native carbonate of iron—is hydrated oxide of iron.

Mr. Grove: Your lordship took it in this way: Dr. Taylor used the word "misnomer" in his cross-examination; he says, it is a misnomer to call it carbonate. That is explained on his re-examination, and the examination of other witnesses. It is true that there is a carbonate.

The Lord Chief Baron: No doubt there is a carbonate.

Mr. Grove: The chemist prepares a carbonate, but that carbonate practically, by time, becomes peroxide.

The Lord Chief Baron: But the carbonate of iron of commerce is hydrated oxide.

Mr. Grove: With great deference, my lord, that is not so.

Sir Frederick Thesiger: It is positively sworn to be so by Mr. Warrington.

Mr. Baron Bramwell: Do you mean that Laming intended to use the carbonate of iron?

Mr. Grove: Most unquestionably; that is the point which we are here to contend.

Mr. Baron Bramwell: I am sure I do not know. Would the way in which he describes his manufacture indicate the production of it?

Mr. Grove: It would; and my lord will recollect that we put the specification of Laming into the hands of Dr. Taylor in re-examination; my friend objected to it, and my lord held that we could not then go into Laming's specification.

Mr. Baron Bramwell: He says: "Another part of my invention consists in increasing the purifying powers of the aforesaid preparation of chloride of calcium, or chloride of calcium and metallic oxide, or chloride of calcium and metallic carbonate, and also of the aforesaid metallic salts absorbed in solution into sawdust, by adding thereto oxide of manganese, iron, zinc, or lead, obtained in a proper state from any other economical source."

Mr. Grove: That is another point.

Mr. Baron Bramwell: What is peroxide of iron?

Mr. Grove: Peroxide of iron is chemically a totally different thing to carbonate.

Mr. Baron Bramwell: Is it a metallic salt?

Mr. Grove: No, my lord; a salt must be an acid. The ground on which we were nonsuited is this: that Laming, by carbonate, means carbonate; although it may be the case that carbonate exposed to air, or treated by heat, changes into peroxide, yet that fact has nothing to do with what Laming specifies, because he not only mentions in his original specification carbonate of iron, but carbonate of manganese, zinc, and lead, which do not change into peroxide. I think it was the use of the word "misnomer" by Dr. Taylor that gave your lordship the impression you had.

The Lord Chief Baron: Not at all; what I finally acted upon was what Mr. Warrington said. He says: "I am manager at Apothecaries' Hall. Carbonate of iron means hydrated oxide of iron. Peroxide and sesqui-oxide mean the same thing." I do not find that he was cross-examined upon that point.

Mr. Grove: Certainly, Mr. Redwood was, and I think Mr. Warrington.

The Lord Chief Baron: It then occurred to me, that if that were so, it was quite useless to be going through the other parts of the case, as to whether the jury believed this or that, or whether the man had gone through the process which he described. Although it appeared to me that that report entirely put the plaintiff out of court, I could not dispose of the cause in that way without putting it to the jury, and going, therefore, to the very end of the cause. It appeared to me that the cause was coming to its termination completely; but when Mr. Warrington said carbonate of iron means sesqui-oxide, I thought that that put an end to it.

Mr. Baron Channell: Mr. Evans says the same thing in his report.

Mr. Baron Bramwell: As I understand your proposition, you make no difficulty on that score. You say the witnesses are right in the expression they use; that is, what is popularly called carbonate of iron is, in truth, peroxide of iron

Mr. Grove: What would popularly be sold as carbonate of iron.

Mr. Baron Bramwell: But you say that this man Laming, in his specification, must be taken to use the correct, and not the popular, term.

Mr. Grove: Precisely.

The Lord Chief Baron: It is as though he said, another part of my invention consists in the use of carbonate of iron, by which I do not mean what is popularly called carbonate of iron, namely, peroxide of iron, or any other oxide of iron, but I really do mean carbonate of iron properly so called. Then you say, if that is so, Dr. Taylor's expression, that what is popularly called carbonate of iron is peroxide of iron, would not show that Laming had been using peroxide of iron.

Mr. Grove: Precisely. Of course, I do not mean to say that a chemist, when asked what a carbonate is, and what an oxide is, would answer that the one means the other; but I say if you went to a chemist's shop to buy one, from the state in which it becomes, you would get the other.

The Lord Chief Baron: You must be perfectly well aware that there were plenty of substances which, before they were thoroughly analysed, went by popular names.

Mr. Grove: But, with great deference, this substance is not one of those.

I say that this is a carbonate, and that this carbonate, the very carbonate in question, if properly prepared, and kept in proper bottles, is a carbonate, and not a peroxide.

Mr. Baron BRAMWELL: I wish to know how he makes out this mode of making carbonate or peroxide.

Sir FREDERICK THESIGER: I think we have been somewhat irregular, because I ought, in the first instance, to show cause against the rule. I will now point out how this is made, and what is the result of the manufacture. After saying that another part of his invention consists in the use of carbonate of iron, he says at the end, "I prefer to precipitate by means of a muriate or sulphate of iron" (I leave out the others), "but I do not claim either of these ways of obtaining a metallic carbonate, but I claim the use of the carbonate above-named for the purification of coal gas." Now, Mr. Warrington says, "I have tried the experiment according to Mr. Laming's patent, of precipitating sulphate of iron. The precipitate passes down, first of all, as a mixed hydrated sulphate and carbonate of iron, and, by exposure to air in the process of drying, becomes hydrated sesqui-oxide, which is used for the purpose of purifying gas, removing from it the sulphuretted hydrogen." [The learned counsel read from the report in this JOURNAL of December the 9th, 1856.]

The LORD CHIEF BARON: Where do you read that from?

Sir FREDERICK THESIGER: From Mr. Warrington's evidence, my lord.

The LORD CHIEF BARON: Taken on the trial?

Sir FREDERICK THESIGER: Yes, my lord; Mr. Evans says: "The material used consists of muriate of iron decomposed by lime, which forms muriate of lime and oxide of iron."

The LORD CHIEF BARON: You have a shorthand writer's notes of the evidence?

Sir FREDERICK THESIGER: I have a printed report.

The LORD CHIEF BARON: Is it the report of a shorthand writer?

Sir FREDERICK THESIGER: Yes, my lord.

The LORD CHIEF BARON: If it is printed so much the better; it is more easily read. An opinion prevails that there is a great objection to the use of shorthand writer's notes. I do not think such an objection ought to exist in a case of this sort, because it is utterly impossible for the judge to take down the evidence in a patent cause. He certainly cannot do it, and at the same time attend to the cause as it is going on. I have more than once made the request that I should take as good a note as I could while the case was going on, but that it should be understood that either party might use the shorthand writer's notes afterwards; and that request has been complied with in every instance in which I have made it.

Sir FREDERICK THESIGER: I do not think that was so in this case, but I perfectly recollect your lordship doing so in more than one case in which I have been engaged.

Mr. Baron MARTIN: If I understand, carbonate of iron is a thing which may be made, but which, upon exposure to air for a short time, becomes something else. If I understand Mr. Grove rightly, it must be kept in a bottle.

Mr. GROVE: Then it does not change so quickly.

Mr. Baron CHANNELL: In practice it remains carbonate of iron; but he says, "I prefer calling it hydrated oxide of iron to carbonate of iron."

Mr. Baron BRAMWELL: I was about to suggest that difficulty to you: whether, taking all the explanation together, it does not result in this, that Laming is using hydrated oxide of iron without knowing it, thinking, perhaps, that it was carbonate of iron.

Mr. Baron MARTIN: He was using something in a large bulk, exposed to the air, for purifying gas.

Mr. GROVE: He never did use it; if we had been allowed to recall our witnesses we should have proved that.

The LORD CHIEF BARON: I wish to state, with perfect respect to you, that I think the point, as I explained, was clear and undoubted; and that, inasmuch as it was in the plaintiff's own case, I did not think it safe to allow the witness to be called back again; in fact, to unstate what he had stated.

Mr. GROVE: We endeavoured to do it in our case, but your lordship would not permit us, on my friend's objection to go into Laming's specification. We offered to show that Laming's specification was not the same thing as our patent: not having Laming's patent in evidence we could not do that.

Mr. Baron MARTIN: Is carbonate of iron a thing that may be manufactured, but which, being exposed to air, ceases to be carbonate of iron, and becomes this thing, which is hydrated oxide of iron?

Mr. GROVE: If your lordship asks me as to the fact, I have two ways of answering it, one upon the evidence before us. It will part with this carbonic acid to some extent, but not entirely. That will be a question of time and degree, and depend upon the mass in which it is kept. A large mass together would keep a very long time without alteration; it would be merely the outside that would alter. A small mass would alter very quickly if exposed; therefore it would be a question of degree. It would be like lime altering into chalk. We all know that lime, by exposure to air, changes to chalk, but nobody would say that chalk was lime. No patent for lime would prevent a patent for chalk, although lime, by exposure to air, becomes chalk.

Sir FREDERICK THESIGER: What I wish to ask (and perhaps my learned friend will answer the question if it is put by your lordships) is, whether, supposing muriate of iron is taken, and muriate of iron is decomposed by lime water, it will not produce oxide of iron?

Mr. GROVE: That is not the point here.

Sir FREDERICK THESIGER: I assure you it is; it is the very thing which is claimed here. "I prefer to precipitate, by means of a muriate or sulphate of manganese, iron, zinc, or lead. I do not claim either of these ways of obtaining a metallic carbonate, but I claim the use of the carbonates above-named, however obtained, for the purification of coal gas." That is in page 5 of Laming's specification.

Mr. GROVE: That is the other part of Laming's patent, which does not apply to the point on which my lord nonsuited us.

Sir FREDERICK THESIGER: I assure you it is the very point.

Mr. Baron MARTIN: I understand that my lord stated, on the admitted evidence in the cause, that carbonate of iron was the same thing as hydrated oxide of iron.

Mr. GROVE: So far from that being admitted, we contend the reverse.

Mr. Baron MARTIN: That is what the witnesses swear; I do not say it is admitted.

Mr. HILL: It is uncontradicted evidence.

Mr. GROVE: That will be a question for me to discuss: but perhaps I had better wait my turn.

Mr. Baron BRAMWELL: I think my brother Channell puts it on the true question; he says, if we find that Laming, in his specification, is speaking of the carbonate of iron of commerce, why then, *ex concessis*, that is practically peroxide of iron. What you say is, he is not peaking of that, but he is speaking of the true chemical article.

Mr. GROVE: In one sense, the article of commerce is the article of the apothecary's shop.

Sir FREDERICK THESIGER: In addition to this patent of Laming's, I think I am entitled to refer to Croll's patent, which was put in evidence at the trial. I think, when your lordships refer to Croll's patent, it will clearly appear that this invention had been anticipated by him. Your lordships proceeded in the nonsuit upon Laming's patent without reference to Croll's patent. I am entitled to maintain that nonsuit if I confine myself to Laming's patent, but I think it will appear most clearly upon Croll's patent that the plaintiff has no title whatever to be the original inventor or discoverer of this process. My lords, there are two other questions which were reserved to me, upon which also your lordships' opinion must be taken: one was with regard to the title of the patent, which I contended at the trial as disclaimed —that is, as altered by the disclaimer—did not cover the invention; the second was, that the terms of the specification were too general, and, in fact, would have put the public upon experiments to enable them to ascertain which of the hydrated oxides of iron would answer the purpose. I will just call your lordships' attention again to the two heads of claim, and the only two that are mentioned in this case, in Hills' specification. Your lordships will be good enough to turn to page 15 of the specification, and disclaimer bound up together. He claims:—"Firstly, the purifying coal gas from sulphuretted hydrogen, cyanogen, and more or less perfectly, from ammonia, by passing it through the precipitated or hydrated oxides of iron, or the subsulphates or oxychlorides of iron, from whatever source obtained, either by themselves, or, what is much better, made into a porous material by being absorbed into or mixed with sawdust, or breeze, or peat charcoal, in coarse powder, or other powers or absorbent material, so as to be readily permeable by the gas, and either used alone or mixed with sulphate of lime or sulphate of muriate, of magnesia, potash, or soda, or in conjunction with any other purifying material at present in use for a similar purpose." But he says: "But I do not claim peroxides of iron or manganese made at a red heat, or the oxide of iron mixed with chloride of calcium, or with the muriates and sulphates of manganese, iron, and zinc, and absorbed into sawdust, &c. Secondly, repeatedly renovating or re-oxidising the said purifying materials by the action of the air, whenever they from time to time cease to absorb sulphuretted hydrogen, so that they may be used over and over again to purify the gas." With regard to that second head of claim your lordships, I have no doubt, have observed that in the evidence of the witnesses Dr. Taylor, and, I think, Mr. Warrington and some others, they have stated that it was perfectly well known that where materials had been saturated with sulphur when they were exposed to air, that they would be revivified, in fact, their power would be restored, and the sulphur would be taken away. That is a thing that was perfectly well known. Your lordships observe in these experiments of Laming, at the Chartered Gas Company's Works, which commenced in August, 1849, before the patent of the plaintiff, which was in November, 1849, it was discovered accidentally that the hydrated oxide of iron, after it had been used for the purpose of purifying the gas from the sulphuretted hydrogen, would, when exposed to the atmosphere, be restored to its integrity, and that they might use it from time to time, and do, in point of fact, use it six different times without any fresh materials being employed for the purpose. Your lordships observe that there were no less than one 1,000,000 cubic feet of gas that were sent out to the customers which had been prepared in this way, by means of the material which had been revivified by exposure to the atmospheric air. Therefore, in point of fact, although the nonsuit did not proceed on that ground with regard to the revivifying process, yet it seems that the plaintiff would have very considerable difficulty, if a new trial were granted to him, in establishing his title under this patent, by reason of this portion, at all events, of his invention being old, there being no claim of invention on that ground. But I pass from the revivifying process, although I shall have occasion to consider it again, when I call your lordships' attention to the title of the patent as it now stands under the disclaimer, and proceed to the consideration of the question arising upon what is now the first head of claim, namely, using the hydrated oxide of iron for the purpose of removing the sulphuretted hydrogen of gas; and I say, according to Laming's patent, and the evidence as explanatory of that patent, there can be no doubt at all that Laming had, in fact, pointed out the use of that very material which was afterwards patented by Mr. Hills in 1849; and I shall, moreover, I think, satisfy your lordships that Mr. Croll, in the year 1840, had also pointed out the use of oxides of iron for the purpose of getting rid of the sulphuretted hydrogen from the gas. My lords, let us first take Mr. Laming's patent; and the only part of it to which it is necessary to direct your lordships' attention will be that to which reference has so often been made, in which there is the claim of carbonate of iron. I take it, of course, as it originally stood; I do not take it upon the disclaimer. "Another part of my invention consists in the use of the carbonates of manganese, iron, zinc, and lead for the purification of coal gas, for which purpose I damp them, and dispose them, mixed or unmixed with sawdust or other matters, in the course of the gas, as is practised with the hydrate of lime; or I mix them with the purifying matters which I have claimed as my invention, or with other purifying matters hitherto in use for a similar purpose, in a state of mechanical division." Then he says, "I prefer to precipitate by means of a muriate or sulphate of manganese, iron, zinc, or lead. I do not claim either of these ways of obtaining a metallic carbonate, but I claim the use of the carbonates above named, however obtained, for the purification of coal gas." My lords, of course we are now to refer to the whole of the evidence?

The LORD CHIEF BARON: Can you hand me up a printed copy of the trial?

[A copy of this JOURNAL was handed up to his lordship.]

Mr. GROVE: I do not think we can admit that. It contains a report of the trial; but it also contains a one-sided article.

Mr. HILL: What we are handing to his lordship is not a one-sided article; it is a report of the trial.

Mr. GROVE: It is not a verbatim report.

Sir FREDERICK THESIGER: Very well; we will hand up the shorthand writer's notes.

[The shorthand writer's notes were handed to their lordships.]

Mr. GROVE: Of course, Sir Frederick, you can read that printed report; but I would rather that their lordships would not refer to it, because it contains that article.

Sir FREDERICK THESIGER: This is what Dr. Taylor says:—"I know that there is a carbonate of iron, so called; but it is a misnomer: there is not a carbonate; it is a peroxide of iron. The hydrated oxide of iron was formerly called carbonate of iron, or subcarbonate of iron, and was used in medicine." The Lord Chief Baron supposed that, if so called in pharmacopœias, it found its way into some encyclopedias, dictionaries, and text-books of chemists? Witness replied in the affirmative, adding, that "it was not so well known as it is now." Then he is asked, "Will you be good enough to give the distinction between 'oxide' and 'peroxide'?"—"The

oxide is the first degree of oxidation, where one equivalent of iron is united to one equivalent of oxygen, and is quite a different substance from the peroxide, which means a higher degree, and is the state in which there are two equivalents of iron combined with three equivalents of oxygen, or one to one and a half; so that the peroxide contains half an equivalent more than the oxide. The hydrated oxide of iron is now known as the hydrated sesqui-oxide; but the term 'hydrated oxide' might imply either the oxide, the proto-salts of iron, or the other. It was not formerly called the ferri-sesqui-oxide: that would be very incorrect. I am not aware that, as early as 1836, the hydrated oxide was known by that name. I knew the *London Pharmacopœia* of that year; but that is no authority in chemistry. I cannot say whether it was so called in that book. They used to call the sesqui-oxide of iron the carbonate of iron for many years after chemists gave it up."

The LORD CHIEF BARON: Yes, I read that, Sir Frederick.

Mr. Baron MARTIN: Is it a question for the jury to say whether Laming, by the use of the expression, "carbonate of iron," meant the carbonate of commerce, or the carbonate used in a chemical sense?

Sir FREDERICK THESIGER: I apprehend that the meaning of the specification is for the judge.

Mr. Baron MARTIN: I apprehend so too.

Sir FREDERICK THESIGER: If there are any scientific terms which require explanation, then, of course, the witnesses would give the meaning.

Mr. Baron MARTIN: After you have got the true meaning of the word, it is for the judge.

Sir FREDERICK THESIGER: I apprehend it is for the judge entirely to construe the meaning of the specification.

The LORD CHIEF BARON: There is an experimental process which, if we could render it available, would be decisive in a moment. I do not profess to be chemist enough to be able to say at once; but I must say I have a very strong opinion that the process described by Laming of the substance that he used, would produce, not the chemical carbonate of iron, but the carbonate of iron of commerce.

Sir FREDERICK THESIGER: Certainly; because, with regard to the chemical carbonate of iron, it is quite clear that that is kept in very small quantities, and must be kept hermetically sealed.

The LORD CHIEF BARON: It is a chemical curiosity: it is not used for the purpose of commerce, but for the purpose of medicine.

Mr. Baron BRAMWELL: As I understand, you have that expression in the evidence of Mr. Warrington. Mr. Warrington says, let him call that what he may, it was hydrated oxide of iron.

Sir F. THESIGER: There is another witness who is equally strong upon that subject, that is, Mr. Redwood, who is a chemist of several years' experience, and who says this: "Carbonate of iron is not sold in commerce. Under the name of carbonate of iron commercially is understood hydrated peroxide of iron." Then he said: "Carbonate of iron of commerce is hydrated peroxide of iron." Then, in addition to that, we have the evidence of Mr. Warrington, who is the manager of Apothecaries' Hall, and a gentleman of very great experience: "The term 'carbonate of iron,' as generally understood, means hydrated sesqui-oxide, inasmuch as in the *Pharmacopœia* it formerly went by the name of carbonate and subcarbonate of iron; but, if you will go into any chemist's shop and ask for carbonate of iron, you will get hydrated sesqui-oxide alone; which, if properly prepared according to the *Pharmacopœia*, is precipitated. I have tried the experiment, according to Mr. Laming's patent, of precipitating sulphate of iron. The precipitate passes down first of all as a mixed hydrated sulphate and carbonate of iron, and by exposure to air in the process of drying becomes hydrated sesqui-oxide, which is used for the purpose of purifying gas, removing it from the sulphuretted hydrogen." It seems ridiculous to argue, that when the intention of Mr. Laming was to apply this article, whatever it was, for the purpose of purifying gas, and which must have been used on a very large scale, that he should intend by carbonate of iron an article which, if it is not merely imaginary, is of such an evanescent character, that it is quite impossible that it could ever have been applied practically to this particular object. Therefore, when Mr. Redwood says, "Carbonate of iron is not sold in commerce, and under the name of carbonate of iron commercially is understood hydrated peroxide of iron;" and Mr. Warington says, "The term carbonate of iron, as generally understood, means hydrated sesqui-oxide," it is clear that Mr. Laming must be taken to have used that expression in the sense in which it would be understood generally.

Mr. Baron BRAMWELL: I doubt, if that stood alone, whether it would not have been a question for the jury.

Sir F. THESIGER: Perhaps it might, my lord. I was pressing that a little too far; but I think the result of the evidence is, to show that this substance—this carbonate of iron—is really a thing which is not known at all. Mr. Redwood says this:—"Real carbonate of iron is not sold. Carbonates of manganese, lead, and zinc can be sold; but carbonate of iron cannot exist in communication with the air without undergoing decomposition in a very few minutes; it could not exist in a sealed tube."

The LORD CHIEF BARON: In fact, carbonate of iron is one of those chemical substances which, if you want particularly for some chemical experiment to be in possession of, you may go to Mawson and get it, or some of those chemists who deal in particular articles; but it is not generally to be met with.

Sir F. THESIGER: I do not know that I can make that stronger by any observations that I may make; but I want to call your lordship's attention to the difficulties which the plaintiff would have to contend with with regard to this other patent of Croll's which was in evidence.

Mr. GROVE: Nothing was reserved upon that.

Sir F. THESIGER; Upon my learned friend Mr. Knowles moving for his rule, Mr. Hill supposed that the different points were reserved for us to raise here, I do not know whether he has specifically mentioned Croll's patent, but Croll's patent was put in.

Mr. HILL: I mentioned, when my friend Mr. Knowles obtained the rule, that there were certain points reserved at the trial for the decision of the court, and that it should be open to us, instead of moving for a cross rule, to support this nonsuit on the grounds reserved to us at the trial.

Mr. GROVE: There was nothing reserved as to Croll's patent

Mr. Baron MARTIN: I think we may as well hear what Mr. Grove has to say on this clear and transparent point as it seems to me.

Sir F. THESIGER: Then I will reserve the other points, my lord, until Mr. Grove has been heard upon this.

Mr. Baron MARTIN: It is clear and transparent; there is no doubt about it.

Mr. GROVE: My lords, I am with my friend Mr. Knowles, who is now speaking in another court. I should much prefer the court hearing him

Sir F. THESIGER: My learned friend, Mr. Grove, is so much superior to any of us in questions of this kind, that I do not think we need wait for Mr. Knowles.

Mr. GROVE: It has now become a question not of chemistry, but of fact. I believe our misfortune in this case is, that a wrong impression arose from the use of a certain word by one of the witnesses, which we had no opportunity of correcting. I venture to submit to your lordships that the case is perfectly clear on the specification alone, and it is only the unlucky use of the word "misnomer" that has led to this difficulty.

Mr, Baron BRAMWELL: For my own part I drop that altogether; it does not operate on my mind at all. What I take Dr. Taylor and the other witnesses to have said in substance is this: it may be that you can produce an article scientifically called carbonate of iron. If this man Laming meant that article, then his patent is not for the same thing as the plaintiff's patent; but the witnesses have said that he did not mean that; what he meant was the thing popularly so called; and we say we come to this conclusion, because, if he did not mean that, the scientific carbonate of iron is a thing impracticable to be used.

Mr. GROVE: It is well that I should recall your lordship's attention to the way in which this matter took place. Dr. Taylor was put in the box; questions were asked of him, as to whether what is called carbonate of iron in the pharmacopœias was not hydrated oxide, and he made those answers which your lordships have already heard. We re-examined Dr. Taylor as to that, and we offered to put Laming's specification in. My lord thought we could not do that, but that it remained to the defendants to do that. The defendants did put Laming's specification in. They examined Mr. Warrington and Mr. Redwood, and we then said, as we could not examine our witnesses as to the contents of this specification, let us recall our witnesses. That we were not permitted to do, otherwise we should have been able to explain at once what would have been the result, which is impossible for me now to do. Our case would have been, that this would not only form a carbonate, but a real carbonate; a carbonate which would last, if in large masses, a considerable time—for months. That is what we tendered in our case.

The LORD CHIEF BARON: I may say I thought that, as this question most distinctly arose in the cross-examination of Dr. Taylor, it should have been persevered in by you, so as to make the matter clear, if it could have been made clear.

Mr. GROVE: We could not persevere, because we could not have Laming's specification in evidence.

The LORD CHIEF BARON: You could have persevered, so far as showing that this carbonate of iron was not universally known, and that it was not proved to be carbonate of iron.

Mr. GROVE: We did re-examine Dr. Taylor, but at that moment we had no more notion that carbonate of iron, or that portion of Laming's patent, was important to us, than we had of chalk applying to our patent. It was not until it impressed your lordship's mind very strongly subsequently, that we considered it was really a point of very great value in the cause. We had Laming's specification pointed out to us, but we took the part which we had disclaimed to be the point which the defendant relied upon.

Mr. Baron MARTIN: Suppose we take Mr. Laming's patent, and this paragraph is put in relating to Hills. We find that Mr. Laming makes use of the expression "carbonate of iron." In the evidence it seems that there are two things called carbonate of iron. There is this strict thing called carbonate of iron, I suppose properly so-called, which it seems can only exist in small quantities, and is liable to change very shortly afterwards if it is exposed to air. There is another thing called carbonate of iron, which every person who deals in the article will get. Who is to determine which is the carbonate of iron which is contained in that specification?

Mr. GROVE: The whole evidence should be heard upon that point. Your lordship misapprehends, if I may venture to say so, the answer of the witness.

Mr. Baron MARTIN: I am putting the witnesses out of consideration altogether. I am asking you how am I to determine, as a judge, what Mr. Laming meant by the expression, carbonate of iron, wholly independent of the witnesses?

Mr. GROVE: I answer your lordship, that you will get at the meaning in this way: let a chemical witness be called, and say to him, take this portion of Laming's specification, follow this, and say, will you get a carbonate or not? I say the chemical witness will answer, that this will form a carbonate, which is certainly what our witnesses would have answered.

Mr. Baron BRAMWELL: But none of the witnesses do so answer.

Mr. GROVE: Because we could not ask the question. We could not ask the question on the cross-examination of their witnesses, who were as adverse to us as they possibly could be. They admit that a carbonate could be formed, but they say it would be changed by air and heat. Even their witnesses admit that.

Mr. Baron MARTIN: Mr. Warrington speaks quite to the contrary.

Mr. GROVE: Mr. Warrington says in his examination in chief: "The precipitate passes down first of all as a mixed hydrated sulphate and carbonate of iron, and by exposure to air in the process of drying, becomes hydrated sesqui-oxide, which is used for the purpose of purifying gas, removing from it the sulphuretted hydrogen. The peroxide of the chemist is the sesqui-oxide of the *Pharmacopœia*—it is the same thing exactly." There is nothing like that in Laming's specification; on the contrary, it is to be used moist and in sawdust. Then, in cross-examination, he says, in answer to Mr. Knowles, "I made experiments on this subject within the last six months, I should say, and entirely with a view to this inquiry. I follow the description given of taking the ammoniacal liquor of the gas-works, precipitating sulphate of iron with it, collecting that precipitate, and drying it by exposure to air; and this produces hydrated sesqui-oxide of iron. There is a little sulphur present; but if the precipitate is washed sufficiently long, the sulphur is carried away before the drying operation commences. The drying operation is a very important operation; it exposes the precipitate to the atmosphere, and causes oxidation, which is the important part of it. If there is nothing as to that in the specification, it must be very faulty, because you cannot purify gas when sulphur is present. I see, he says, nothing about drying; and, unless you expose it to drying, you get carbonate of the protoxide of iron, which is the hydrated carbonate of the oxide."

Mr. HILL: Just read the re-examination on that very point.

Mr. GROVE: "Re-examined by Sir F. Thesiger: Any chemist who read this specification, and had to carry it out, I should imagine would understand that it must be dried. I cannot imagine that either Mr. Laming, or any patentee, would use it in the wet state, The precipitate would be a wet material that could not be carried about except in buckets." Mr. Laming provides that it shall be mixed with sawdust. "Even if it were mixed with sawdust, I should say it would certainly require to be dried, in order to be moved about from place to place to be put in the purifiers. I do not see how the thing could be manipulated without being brought to a dry state." We say we could have offered external evidence to show that at the time of Laming's specification, if a chemist read the contents of it, he meant carbonate of iron. I am now going to the legal construction, and not to the chemical construction, of his specification. That I shall submit to your lordships. I am now in this difficulty, that I am not supported by my own witnesses, therefore, I can only take the specification as it stands. Even

upon that assumption, I should submit to your lordships that there is ample evidence that Laming meant carbonate, and not oxide. I submit it is a question of degree. I may take lime as an illustration. If lime is left for a long time exposed to the air, the outside surface will change and the inside will be preserved as lime. Your lordships will find that Laming, throughout his specification, contra-distinguishes oxides and carbonate. Your lordships will find he says, in his specification, "I do not claim either of these processes for making a mixture of chloride of calcium and a metallic oxide or carbonate, but I do claim the application of mixtures so made to the purification of coal gas." Then, in this very paragraph, he says: "Another part of my invention consists in the use of the carbonate of manganese, iron, zinc, and lead, for the purification of coal gas." There was ample evidence to show that carbonate of manganese, zinc, and lead, do not change as carbonate of iron does. Therefore, he couples these three things with carbonate of iron. As I submit, he meant the real carbonate; and, moreover, the disclaimer, by which he disclaims the other carbonates, was a disclaimer after the date of Hills' patent. Finding that the hydrate is the best material, he disclaims all those other substances. Then he goes on elaborately to give a preparation of this; and this preparation in itself, I submit to your lordships, shows that he means a carbonate, because he says: "To obtain these carbonates in an economical manner, I throw down from ammoniacal or gas liquor obtained in making coal gas, and previously distilled or not, the sulphur which it contains, and having drawn off the clear liquid, I next precipitate its carbonic acid, or, instead of making two separate precipitates, I throw down a mixed sulphuret and carbonate of the precipitant or precipitants. I prefer to precipitate by means of a muriate or sulphate of manganese, iron, zinc, or lead. I do not claim either of these ways of obtaining a metallic carbonate, but I claim the use of the carbonates above-named, however obtained, for the purification of coal gas." He gives a mode by which you may make a carbonate, but there are one hundred modes by which you can make carbonate. I submit to your lordships, upon that passage of the specification alone, there can be no doubt that he did really mean a carbonate, and not an oxide, and that he was not then aware that the hydrated oxide was the oxide in question. If extraneous evidence might have been brought forward, we could have shown that they were taking a license for the hydrated oxide, not regarding their patent as a patent for hydrated oxide. It really was the discovery of Mr. Hills that it was hydrated oxide, and not the oxide as Laming had it. In the next paragraph he goes on: "Another part of my invention consists in certain ways of treating the ammoniacal liquor of gas-works, so as to obtain from it and sulphate of lead a solution of sulphate of ammonia, and either an oxide or a carbonate of lead of sufficient purity to serve as or to be made into white lead." Then again, although this is not the invention, he contra-distinguishes the terms "oxide and carbonate." He goes on to say, at the end of the paragraph: "In the case of the caustic ammonia the lead will be found at the bottom of the vessel as a white hydrated oxide, and in the case of the carbonated ammonia a white carbonate of lead falls down, the solution, in either case, containing sulphate of ammonia." Then again, he says, in the next paragraph: "Another part of my invention consists in increasing the purifying powers of the aforesaid preparation of chloride of calcium, or chloride of calcium and metallic oxide, or chloride of calcium and metallic carbonate; and also of the aforesaid metallic salts absorbed in solution into sawdust, by adding thereto oxide of manganese, iron, zinc, or lead, obtained in a proper state from any other economical source." So that I say he carefully distinguishes the two; he has a paragraph specifically relating to carbonate, and he has a paragraph specifically relating to oxide. He would not have required to specify oxide in any form if carbonate had given him oxide, or if he regarded carbonate as meaning oxide. "The oxide which I prefer is one or other of the oxides of manganese prepared from the carbonate of that metal by a process of which I claim the practical application. It is as follows:—I expose the carbonate to a heat gradually increased to near redness, with access of air for an hour or two, or until the carbonic acid be expelled, and oxygen absorbed in its place." Now the difference between manganese and iron is this, that one requires a higher heat than the other to expel the carbonate; and so here he says the oxide which he prefers is prepared by a process of which he claims the practical application.

Mr. Baron BRAMWELL: I will tell you what my difficulty is at present in your case. As I understand, the defendants' witnesses, who are the only persons called upon this matter, say that the description is a description of the product of hydrated oxide of iron. He may call it carbonate, and it may in its first moments be a carbonate; but, inasmuch as to be useful it must be dry, for otherwise it cannot be methylated when applied to the purification of gas, it will be the same as the plaintiff claims. That is what they say. Still, upon that, my lord, of course we ought not to nonsuit, I take it, speaking with submission, unless it is quite certain that is the agreed state of facts.

Mr. GROVE: Precisely. That certainly was very far from being the agreed state of facts, because we argued before my lord that it was not so, not only upon the evidence as it stood, but upon the evidence which we proposed to call, and which we now say is evidence that we had a right to call in reply.

Mr. Baron BRAMWELL: The defendants' witnesses corroborate it to some extent, but not to the extent of the evidence of Dr. Taylor, because their evidence only goes to show that what is commonly called carbonate of iron is not carbonate of iron; but their evidence does not go to show that this process would not have produced carbonate of iron.

Mr. GROVE: The only evidence as to what is the process of Laming is the evidence of the defendants' witnesses; there is no evidence of ours.

The LORD CHIEF BARON: I do not find in the shorthand writer's notes that I objected to that.

Mr. GROVE: Yes, my lord.

Mr. Baron MARTIN: I do not understand how my lord could possibly object. You are the plaintiff, and could put in any evidence you think proper.

Mr. GROVE: All I can say is, that it was ruled that it was evidence for them, and no part of our case, to go into Laming's specification. I believe it arose in this way, that it was tendered upon re-examination.

Mr. Baron MARTIN: That is another thing.

Mr. GROVE: We offered to put it in.

The LORD CHIEF BARON: You did examine as to similar specifications.

Mr. GROVE: They put in Croll's.

The LORD CHIEF BARON: My brother Martin is certainly quite right in what he says; because, if you proposed to put it in in your examination in chief, I could not possibly stop you; but, when you proposed to do that in your re-examination, I ruled that you were not at liberty to do so, because it did not arise out of the cross-examination.

Mr. GROVE: With great submission it did, upon this ground, that their cross-examination referred to a prior publication, which prior publication was Laming's. To explain that cross-examination, I venture, with submission, to say that we were entitled to put that in.

The LORD CHIEF BARON: The next witness might have spoken to it.

Mr. GROVE: I venture to submit it was legitimate on re-examination.

The LORD CHIEF BARON: It is not worth discussion, because no rule has been granted as to that.

Mr. GROVE: That was a most important element in the rule.

Mr. Baron MARTIN: What your case goes to is, if any person came to Dr. Taylor the day after the expiration of Laming's patent, and said, "I want to manufacture this—what am I to do?" and Dr. Taylor told him to go and get some carbonate of iron, or make an attempt to do it, that man would be guilty of an infringement of Mr. Hills' patent. That is the inevitable conclusion of your argument.

Mr. GROVE: I think not, if I might venture to say so.

Mr. Baron BRAMWELL: Mr. Grove, one of the grounds of the rule is, that the Lord Chief Baron was wrong in ruling that carbonate of iron, as used in the former part of the specification, meant hydrated oxide of iron, so as to destroy the novelty. Of course, as a matter of law, my lord could not do that; he could only do that when it was conceded as a matter of fact by both parties, as I conceive. You say the defendants' witnesses swore to it, but that your own witnesses did not.

Mr. GROVE: We say that the defendants' witnesses do not say that.

Mr. Baron BRAMWELL: If my lord had put to the jury, If you are of opinion that the process here indicated will produce, by the time it comes to be applied to the purification of gas, not a carbonate of iron, but hydrated oxide of iron, then the plaintiff's invention is not new—that you could not complain of.

Mr. GROVE: No, my lord.

Mr. Baron BRAMWELL: But, inasmuch as he does not say its meaning must be ascertained by witnesses and by the verdict of a jury, you object to it.

Mr. GROVE: There is a constant struggle in patent cases upon that. I submit, upon the construction of the specification, the question whether certain chemical ingredients would produce a given result, is not a question for the court. The court being fully informed by witnesses on both sides of what is the result of a given state of things, can construe the language of the specification and its legal effect; but the court cannot construe a specification and say whether a given thing will precipitate a carbonate or oxide. That is entirely a matter of evidence, and not for the opinion of the court. Therefore it is not a question of how the court would construe it, but what does this specification mean chemically. What result will this recipe produce? That is the whole question in dispute here. It is no dispute which the court can settle on the face of the specification.

Mr. Baron CHANNELL: Laming's specification is included in the objection. It seems to me there was a difficulty in putting that in in Dr. Taylor's re-examination; but I do not see why you could not have asked the next witness whether the product of the process pointed out in this paragraph would be, in his judgment, carbonate of iron as an article of commerce. It seems to me the defendants' witnesses place you in a great difficulty.

Mr. Baron BRAMWELL: If what would be the product of the process described by Laming is to be proved as a fact, unless the fact is admitted between the parties, I do not see how it can be within the province of the judge to determine the meaning of the thing. The jury ought to determine the fact, and then the judge can put a meaning upon it; but my lord's judgment upon this case, as I understand your objection, assumes the correctness of the evidence for the defendants.

The LORD CHIEF BARON: Oh, no.

Mr. GROVE: Entirely; that is our argument.

The LORD CHIEF BARON: I never adverted to that in the least degree in the world.

Mr. Baron BRAMWELL: The evidence for the plaintiff does not show that this would produce carbonate.

The LORD CHIEF BARON: That has nothing to do with it. I beg to inform the court that it is an error to suppose that. I said that would be an experiment. I know you wanted to call evidence to show what it would produce; but I would not allow that because the time had gone by.

Mr. Baron MARTIN: Have you got the evidence of Dr. Taylor? I should like to have the printed report.

Mr. GROVE: I would much rather your lordship referred to the shorthand writer's notes.

Mr. HILL: I must say, in justice to this report, that I watched Mr. Grove as he was reading the shorthand writer's notes, and I followed him word for word.

Mr. GROVE: It omits a great deal. I do not mean to say it mis-states anything; and besides it has an article in it.

Mr. Baron CHANNELL: This JOURNAL, I suppose, is a publication very much attached to gas and water companies. I suppose a shorthand writer was employed by this JOURNAL to report the trial. If it so happens that there is a leading article in the same number as the report of the trial, we can read the report without reading the article.

[The Lord Chief Baron here referred to the evidence of Dr. Taylor.]

Mr. GROVE: Now your lordship has read that evidence, it is just to those learned judges who were not at the trial to state my view of the way in which this arose. The cross-examination of Dr. Taylor went upon Croll's specification, which was put into his hands, and he was largely cross-examined upon it. A question or two was asked as to the pharmacopœias; but nothing was done to point either Dr. Taylor's or our attention to Laming's specification. No question was asked about any other process than that of the original pharmacopœia, which might, or which might not, for all I know or care, form, by exposure to the air, an oxide. In re-examination he was asked, rather at a guess, for neither my learned friend nor myself knew what point they meant to rely on, whether that which is called carbonate does not in effect contain a portion of carbonic acid: and then, in addition to that, "I presume that a person would not understand by carbonate, oxide?—No." That was treated at that time as comparatively a minor point; but my friend, Sir F. Thesiger, finding out that this answer of Dr. Taylor had made a great impression on my lord's mind, made it a most important part of the defence. Their evidence was applied to Laming's specification, which we had no opportunity of answering. Admitting, for the present, that the evidence of Dr. Taylor was in their favour, still we had not then any opportunity of showing what the real matter disclosed in Laming's specification was. But even on the evidence as it stands, I submit to your lordships that this was clearly a question for the jury; because Dr. Taylor himself says that no person would understand by the term carbonate oxide, although he says that what was sold in chemist's shops as carbonate, was in fact oxide. But that does not at all prove that Laming's publication of a specific carbonate, made in a particular way, and claiming carbonate and not oxide, was a publication of the oxide.

Mr. Baron CHANNELL: Whatever weight may be attache dto Dr. Taylor's evidence, I do not understand him to mean that, and that only. If you looked into a dictionary of chemistry, you might suppose that a great many new acids and new salts had been discovered; but if you read them carefully

you would find that they are old things called by new names. He says, I repudiate the notion that carbonate of iron does not mean hydrated peroxide of iron. He changes the name, but is speaking of the same substance.

Mr. GROVE: We should have explained what his meaning was, as clear as broad day, if we had been allowed.

Mr. Baron BRAMWELL: If that is so you were properly nonsuited. You were nonsuited on the ground that your invention was not new; that is to say, that Laming's invention, as described or used, was the same as yours.

The LORD CHIEF BARON: To a certain extent.

Mr. Baron BRAMWELL: In terms it is not; for you use the term hydrated oxide, and he uses the term carbonate of iron. The law says, it cannot take notice that they are identical until they are proved to be identical. The evidence of the witnesses, called on the part of the defendants, may be denied by you; therefore, unless you admit the fact, there is no propriety in nonsuiting you. It must be made out that Dr. Taylor admitted that. You say that Dr. Taylor admitted nothing of the sort; and that all he said was, that what was formerly called carbonate of iron, is in truth, oxide. But you say, he did not say that there could not be an employment of carbonate, and that this invention of Laming did not purport to be a publication of carbonate.

Mr. GROVE: Precisely. I say he did not say so, or dream of saying so. It is not, as Mr. Baron Channell has put it, that it is a thing which has gone by a name at one time, which has been found to be wrongly named, and goes by another. This was a thing which was believed by persons to be carbonate, but from the transitory nature of the thing, practically speaking, oxide was sold. Therefore, when they say carbonate means oxide, they mean, that when you go to a chemist's shop for carbonate you get oxide; but, chemically and scientifically, carbonate does not mean oxide.

The LORD CHIEF BARON: Nobody ever dreamt that it did; things are called copperas which have no copper in them at all

Mr. GROVE: This case is entirely different from that.

Mr. Baron MARTIN: I thought the judge was bound to understand the English language; and therefore ought to know what carbonate of iron meant. If he wants to know, and does not know, he must call in competent persons to make him understand. The jury have nothing to do with it.

Mr. Baron BRAMWELL: I quite agree with that; but I do not understand that any witness has said that the usual meaning of carbonate of iron is oxide. As I understand, the defendants' witnesses expressly state that there may be a carbonate of iron.

Mr. GROVE: Even in the cases in which they themselves say it is an oxide, they say it is a carbonate at first, but that it changes to oxide It is the very thing which Mr. Warrington himself says on cross-examination. He says, that carbonate changes to oxide by exposure to air; he does not pretend to say that carbonate of iron always means oxide of iron. Neither Mr. Warrington, nor any other man, would have put such a proposition forward to the court and jury; but what they said was, that what is commonly known as a carbonate, unless it is chemically preserved, becomes an oxide, and changes its nature entirely.

[It being past four o'clock, the court here adjourned.]

THURSDAY, APRIL 23.

Mr. GROVE: My lords,—The question which I was arguing on Tuesday is, substantially, whether Laming's specification, upon the face of it, takes away the novelty of Hills' invention. I have looked at the printed report (the JOURNAL OF GAS LIGHTING), and I see that it is accurate. I objected to it, not having read it.

Mr. Baron CHANNELL: If you have now no objection, it can be handed up to us. [Copies of the JOURNAL were accordingly handed to their lordships.]

Mr. GROVE: It seems to me a fair report, and much more convenient than the shorthand writer's report. Now, my lords, everything that goes to the novelty must be on the face of the specification, for no user of this part of Mr. Laming's patent was proved. I find from the report, that my lord seemed to consider that the user of which they gave evidence was a user of this carbonate portion of Laming's; but that was not so. The evidence as to user, of course would have been a contested question. As far as the question of the carbonate goes, it is not a prior user, but a prior publication; and, therefore, goes to the plea of not the first inventor, and not to the plea of having been previously used. It comes to this: Did Mr. Hills invent this process, or was it, judging from the specification, alone the invention of Mr. Laming? That is a question not now before the court. It is not, Did the public previously use the invention of Mr. Hills; but did somebody else, prior to Mr. Hills, invent this process? I venture to say, from this specification alone, that it is clear that was not the case; that the invention of Mr. Hills was not invented by Mr. Laming Not only are there the very numerous clauses in the specification, to which I have already called your attention, where the words "oxide" and "carbonate" are contradistinguished; but we have, at page 7, a part of his invention, in which he specifies both to be used, the oxide and the carbonate, as an admixture. "Another part of my invention consists in the use of the carbonates of manganese, iron, zinc, and lead, for the purification of coal gas, for which purpose I damp them, and dispose them, mixed or unmixed with sawdust, or other matters, in the course of the gas, as is practised with the hydrate of lime; or I mix them with the purifying matters, which I have claimed as my invention, or with other purifying matters hitherto in use for a similar purpose in a state of mechanical division." So that he not only specifies oxide and carbonate separately, but one part of his patent is for an admixture of these two things. Moreover, in this very paragraph, at the conclusion, he declaims the oxide used alone:—"I do not claim the exclusive use of any metallic oxide for purifying coal gas, but what I do claim is a combination for that purpose, of oxides of manganese, iron, &c., with the other matters above recited." He claims oxide mixed with soda, he claims oxide mixed with carbonate, but he does not claim oxide alone. But, at the bottom of page 6, he does claim carbonate alone.

Mr. Baron MARTIN: Suppose a man had gone into a shop to buy carbonate of iron, and they gave him for that hydrated oxide of iron, which, according to the evidence of Dr. Taylor, nobody could get, would that man be guilty of infringing your patent?

Mr. GROVE: Yes, after our patent.

Mr. Baron MARTIN: For doing that which a person understanding the trade would tell him was the other man's patent.

Mr. GROVE: It is not a man's understanding of the trade, it is a chemical specification.

The LORD CHIEF BARON: I beg your pardon; it is not a chemical specication.

Mr. Baron MARTIN: The use of a specification is to communicate to the public the mode of doing the thing, so that, at the end of fourteen years, they may do so. That is the consideration for the privilege. Therefore, it seems to me, that if a man publishes on paper that which a person who wished to carry out the invention, going to a tradesman, and acting on the ordinary language as used in the trade, would have given to him, it is impossible to say that that man would be infringing the patent.

Mr. Baron BRAMWELL: Suppose Laming brought an action, complaining of an infringement of his patent, and showed that the infringer used oxide of iron, would the infringer be at liberty to say, "Well, but you claimed the carbonate?"

Mr. GROVE: Yes.

Mr. Baron BRAMWELL: Or would Laming have been at liberty to say, "By carbonate I mean oxide?"

Mr. GROVE: I submit that is the question put in another point of view.

Mr. Baron MARTIN: I have thought of it a good deal, and my impression is, that it may be that Laming's patent is bad by reason of his specification being ambiguous on that point; but, nevertheless, when once he published his specification, no other could take out a patent for it.

Mr. GROVE: My answer to your lordship is this: I will take it that Laming's patent is bad, because he specifies a thing which practically would not be good. I am giving now the full scope to the argument of the other side, because there was no evidence to show that the carbonate was not a good material of itself. But assuming it is bad, I say Laming's patent and specification are clear upon that point—that he meant "carbonate" by "carbonate." All admit that there is a carbonate. The only *equivoque* about the word is that the carbonate becomes an oxide. All admit there is a real carbonate.

Mr Baron BRAMWELL: You must not assume that *all* admit it; because I think I am right in saying that, in my lord's opinion, nobody admits there is a carbonate.

Mr. GROVE: It is perfectly clear, on the evidence of the defendants' own witnesses. There is a carbonate which is transitory. They say, during exposure to the air, the carbonate changes into oxide; and, therefore, on their own admission, there is a carbonate. I will undertake to prove that, from the evidence, beyond the possibility of a doubt. It is not a misnomer in the sense of a thing having been found out to be different, like copperas, instead of being sulphate of iron, afterwards turns out to be something else. This is a thing which was and is a carbonate, but it is transitory, and therefore, if you go to buy carbonates, you buy oxides. Mr. Warrington, perhaps the most energetic of my friend's witnesses, admits that a carbonate is formed by Laming's process, but he says it will pass off so rapidly that you cannot practically use it other than as an oxide. Mr. Warrington says that the precipitate, formed according to Laming's specification, falls down in the carbonate. We may neglect the sulphuret, for that is another thing. [The learned counsel then read a portion of Mr. Warrington's evidence at the trial.] It is admitted by all that there is a carbonate: but if you go to a chemist's shop for it, you will buy oxide. That being the case, we have to consider, not what has any person used before the date of Mr. Hills' patent, but what does Mr. Laming say in his specification.

Mr. Baron CHANNELL: In page 6 he speaks of t he use of the metallic carbonate of iron, and then the further invention is described at page 7; and it is manifest, on the face of his specification, that he distinguishes between the oxide of iron and the carbonate—that is the way you put it.

Mr. GROVE: Yes. My argument is this: On the specification he shows a mixture, using the term carbonate with oxide, and he disclaims oxide, except as a mixture. In page 6 he claims carbonate alone. I say that, right or wrong, useful or useless, Laming, by "carbonate," meant "carbonate." It may be that that was an useless patent. It may be that it is useful. I could tell the court how the fact is, but as it was left open on the evidence, I do not know that I have a right to do so. We will assume that carbonate of iron is a carbonate; then what would be the effect of the specification? It does not tell the chemist that oxide will do, but it tells the chemist that carbonate will do; and the chemist might say he has included a wrong thing. It may be, on the other hand, that carbonate will do as well as oxide.

The LORD CHIEF BARON: I do not pretend to have any more acquaintance with these things than will enable me to understand the propositions when they are enunciated; but reading the two patents together, it seems to me that Laming's process is precisely, or very nearly the same as that of Hills'. I will tell you wherein there is clearly a sameness, and then you may point out a diversity. Hills uses for the purpose sulphate or muriate of iron; and he decomposes sulphate or muriate of iron by hydrated sulphate of ammonia, or by lime, magnesia, potash, or soda. That is all he mentions. Laming, on the other hand, mentions first ammoniacal liquor, and he says, I precipitate by means of muriate or sulphate of iron. Therefore, he uses the ammoniacal liquor which is obtained in the making of coal gas, and sulphate of iron, to get the substance that he wants. Hills uses sulphate or muriate of iron with either ammonia, lime, potash, or soda. Where is the difference between the two processes? It does not occur to me that there is any.

Mr. GROVE: The difference between the processes is exactly the point in question.

The LORD CHIEF BARON: Before you have done, if you will point out scientifically in what it consists, so that one may understand it, and address one's attention to it, I shall be glad, and you will have made considerable progress in your argument.

Mr. GROVE: Laming's contains carbonic acid, and Hills' does not. The ammonia of gas-works is a carbonate of ammonia. There is no carbonic acid at all in Hills' process.

The LORD CHIEF BARON: That is, he gets rid of the carbonic acid of the ammoniacal liquor.

Mr. GROVE: And fixes it into the product he uses for purifying.

The LORD CHIEF BARON: I never heard of carbonic acid being precipitated.

Mr. GROVE: He means he fixes it, or that he carries down the carbonate. It is not a very accurate expression. It would have been more strictly chemical if he had said, with this carbonic acid I precipitate the iron, zinc, or whatever it is. That is the essential difference of the two.

The LORD CHIEF BARON: You say there is no carbonic acid in Hills' process.

Mr. GROVE: Not at all.

The LORD CHIEF BARON: When any chemist speaks of potash or soda, he certainly means the carbonate of soda.

Mr. GROVE: I think not.

The LORD CHIEF BARON: I should be disposed to hold that a specification which spoke of the pure alkali of either potash or soda merely as potash or soda.

Mr. GROVE: Even if that were conceded it would make no difference. It would not precipitate the carbonate of iron.

The LORD CHIEF BARON: I think it would come with some carbonate in it.

Mr. GROVE: It would be infinitessimal. If lime were used it would take all the carbonic acid away. He mentions lime.

The LORD CHIEF BARON: He does not say unslacked lime or quick lime.

Mr. GROVE: If persons use impure materials they do not follow Hills' specification. It may be they may use impure materials, and they may get a result more or less approximate.

The LORD CHIEF BARON: If any person were to take out a patent for a cement, or anything of that kind, and were to speak of lime without saying it was quick lime, if he meant quick lime, I think that would be bad.

Mr. GROVE: That would be a question for the jury on the chemical evidence.

The LORD CHIEF BARON: I do not think what a man meant is a question for the jury.

Mr. GROVE: If a man says "lime," it is a question whether he meant lime, or carbonate of lime, or chalk. It may make a most material difference in a patent whether lime or chalk is used.

The LORD CHIEF BARON: People who profess to instruct the public may instruct them correctly, and not take the chance of going to a jury to ask a question as to what they meant. Soda, or potash, would be understood, as far as my experience goes, by all the world as not a pure alkali.

Mr. GROVE: I venture to say, that any chemist reading this specification, would read "lime, soda, and potash," as "lime, soda, and potash," and not "carbonate."

The LORD CHIEF BARON: If you went to a shop, and said, I want some potash, or soda, what would you get?

Mr. GROVE: You might get it more or less carbonated. Carrying that out, it would be impossible for a chemist to specify any invention, because he would have to double and treble everything.

The LORD CHIEF BARON: It is perfectly well known what are the commercial expressions used to designate particular substances.

Mr. GROVE: With the greatest deference, I submit that no commercial person, or chemical person, would ever read in the specification of a patent, ever so roughly connected with chemical purposes, "lime," for "carbonate of lime." Lime is, on the contrary, distinguished practically and chemically from chalk. It is different in all its practical attributes; and, if Mr. Hills used the word "lime," and meant "chalk," his specification would be bad. Lime so clearly means lime, and not chalk, that the specification would be bad if he put lime, meaning chalk. There are cases in which both lime and chalk might do; but, in a vast number of cases, lime would do where chalk would not; and *vice versâ*.

Mr. Baron BRAMWELL: Suppose Laming had said, my invention consists in the use of carbonate of iron, by which I mean carbonate of iron, and not what is commonly so called, which is, in truth, oxide of iron; in that case it must be admitted that the patent would be good. A man says he uses carbonate of iron: what are you to understand by that? Carbonate of iron, truly and properly so called, or carbonate of iron, improperly and untruly so called? I take it to be a rule of law, that although a judge is bound to know the language, and, peradventure, the misapplication of terms, so as to say what a man means, he is, in the absence of evidence to the contrary, to say that he uses a word in its strict and proper signification. For instance, a man in his will says, "I give to my son my estate, so and so;" that means his legitimate son, in the absence of any evidence to the contrary. But if he has got no legitimate son, and an illegitimate son, it means the illegitimate son. If a man says, I use carbonate of iron, he means carbonate of iron in its proper sense, unless there is evidence to the contrary. That is a question of fact—in what sense he used the word. My difficulty in this case is this:—My lord says he reads Professor Taylor's evidence as conclusive to show that, on the facts, it must be taken that he was using the words "carbonate of iron" in an illegitimate, or secondary, or improper sense.

The LORD CHIEF BARON: It is the original use of the word, corrected by a more perfect knowledge of the subject.

Mr Baron BRAMWELL: My notion is, that this specification ought to be understood, in the absence of affirmative reasons to the contrary, that when a man says, I use carbonate of iron, he meant carbonate of iron. If there was not such a thing, and if the context or any other circumstance showed that he could not be meaning a true carbonate, then you might use it in a secondary sense.

Mr. GROVE: I trust I shall thoroughly satisfy your lordship that that is not what Professor Taylor meant to say; and that it is not in fact, taking the whole of his evidence together, what he did say. First of all, it is admitted by all the witnesses that there is such a thing as "carbonate of iron," even if it be ever so refined.

Mr. Baron BRAMWELL: My lord reads Professor Taylor's evidence, as meaning that there is no such thing as carbonate of iron.

Mr. GROVE: If we had had the most remote notion that that was passing in my lord's mind we could have cleared it up with Professor Taylor in one minute.

The LORD CHIEF BARON referred the learned counsel to a portion of Professor Taylor's evidence at the trial.

Mr. GROVE: Will your lordship allow me to read the re-examination, although we really did not know what was your lordship's difficulty?

The LORD CHIEF BARON: My object was, not to get the construction of any particular passage in any particular specification, but to get, generally, what was the meaning of the term "carbonate," among persons conversant with the subject.

Mr. GROVE: It may be that the thing sold by chemists was a misnomer—that the thing sold in shops was not "carbonate," but "oxide;" but it may also be that the thing produced by Laming was carbonate and not oxide.

The LORD CHIEF BARON: It may be so.

Mr. GROVE: That is enough for my present argument. Laming's specification was not put into Dr. Taylor's hands, and he was not asked, if you precipitate carbonate of ammonia by muriate of iron, what will be the compound that falls down. He was not asked whether a chemist precipitating carbonate of ammonia by muriate of iron would form or not form carbonate of iron. He was only asked as to a certain blunder which had been made in chemists' shops. His mind was only going upon a blunder in the *Pharmacopœia*. Even as to the *Pharmacopœia*, what does he say upon re-examination? "What is called the carbonate of iron contains some small portion of carbonic acid. I tried that experiment upon it. There is a portion of carbonate, but mixed with oxygen." It is enough for my present purpose that the thing exists. Then, he says also: "A person would not by carbonate understand oxide, certainly not." Therefore, Professor Taylor's evidence goes to this, that it clearly shows that there is a thing which may be made carbonate of iron. He also shows that if you go to a chemist's shop to buy carbonate, what is called "carbonate" is a misnomer, because it is "oxide."

Mr. Baron MARTIN: Are you acquainted with the case of "Sturn *v.* Delarue," 5th Russell? That was a patent for enamelling, and the person was to get the finest and purest white lead; and the Lord Chancellor said that meant what could be got in a chemist's shop. What is carbonate of iron? What you can get at chemists' shops.

Mr. GROVE: With great submission, if Mr. Laming had said, "Go to a chemist's shop and buy carbonate of iron," there might have been something in it. Laming just does what the court in that case said the plaintiff ought to have done. Laming does not say, "Go to a chemist's shop and buy carbonate of iron;" but he gives a process by which the carbonate may be made.

Mr. Baron BRAMWELL: You are not advocating the goodness of Laming's patent.

Mr. GROVE: I do not care whether carbonate of iron will succeed or not. Nobody is proved to have gone after Laming's patent to a chemist's shop, and bought sesqui-oxide and used it. It is very important to read Laming's disclaimer and specification. The Patent Law says that a disclaimer must be read as part of the original specification, but not to make an anterior user of a patent. Laming's disclaimer is not till after his patent, probably on account of Hills' patent; and Laming, in his original specification, claims the carbonates of manganese, iron, zinc, and lead; but, after Hills' patent in 1849, he disclaims three of those. What was the state of knowledge at the time of Hills' patent? Why, that the patent of Laming existed, in which, in the most emphatic terms, he says corbonate of iron is useful for purifying gas. He distinguishes, in the several paragraphs, carbonate from the oxide. He uses the term "oxide of iron" repeatedly, in contra-distinction to "carbonate of iron." I say that, in the state in which Laming's specification existed prior to Hills' patent, there is not a chemist in Europe who, by reading it through, would not have understood that he meant "carbonate." Therefore, I say, he had not given to the public the knowledge that hydrated oxide would purify gas. He had only told the public that carbonates would do. Whether he was right or wrong, is a matter of little importance; and all the knowledge he has given the public is, that carbonates would do. Take the very case which both parties admit to be an invention, and an invaluable one—of the revivification. What is that but precisely a similar question? Is it or not a discovery that a material, after cleansing gas, can, by agitation with the air, and by exposure to the air, become re-oxidised, and be able to be used again? Both parties admit it is an important discovery, whoever has made it, as affecting the gas trade; and it is the very thing that Mr. Hills has done with reference to carbonates or oxides. If this be no invention of Mr. Hills, the second is no invention. When it is found out that a thing becomes chemically changed by exposure to the air, it is like a new substance. Suppose what you wanted to purify gas with was carbonic acid, would it not be a discovery in Mr. Hills to say, "I make oxide of iron, and pass the gas through it, by which it is turned into a carbonate, and when agitated in the air the carbonate becomes changed to an oxide; and then I pass my gas through and surcharge it with carbonic acid, and so purify again?" The very essence of the invention, as I am now putting it, would be the abstracting the carbonic acid and forming the carbonate. It is admitted by all parties that it is a great thing to discover that the same thing takes place with the sulphuret which takes place with the carbonate.

The LORD CHIEF BARON: I should wish to call your attention to page 6 of Laming's specification, and page 14 of the plaintiff's specification. The plaintiff says this:—"Hydrated or precipitated oxides of iron may be conveniently prepared by decomposing sulphate or muriate of iron with lime." In page 6 of Laming's specification you will find this:—"It is desirable to make it, for the purposes of gas-purifying, by decomposing muriate of iron by means of lime." The identical thing.

Mr. GROVE: We were not nonsuited on that passage at all; but entirely on the carbonates.

The LORD CHIEF BARON: That is quite true. But, you see, part of your argument was this when you moved for the rule. If we had been allowed to call our chemical witnesses, we should have shown that the process given by Laming is not the process given by Hills.

Mr. GROVE: So we should. We should have shown it as to this, and as to the other.

The LORD CHIEF BARON: The court has a right to read what I am now calling your attention to, and to say now, the nonsuit is right; the two substances must be the same.

Mr. GROVE: I say the court cannot do so now, because we want to explain that by evidence. We expected, from the nature of the objections, that this was the part of Laming's specification on which they relied, and our evidence was wholly directed to this; but it was the carbonates upon which the point turned. We had got a mass of evidence on this clause in the specification, which was not before the court at all; because, in consequence of the strong opinion my lord entertained, they directed their case to the carbonates; and, of course, our cross-examination of their witnesses went to that.

Mr. Baron BRAMWELL: Does he not say chloride of calcium is both abundant and cheap; but, in certain circumstances, it would be desirable to make it, for the purpose of gas-purifying, by decomposing muriate of iron by means of lime, or chalk, if the latter will suffice?

Mr. GROVE: He says he used chloride of calcium for getting rid of ammonia.

The LORD CHIEF BARON: If decomposing muriate of iron by lime would produce both hydrated or precipitated oxide of iron, and also produce chloride of lime,

Mr. GROVE: That is not the point.

The LORD CHIEF BARON: I want to put you in possession of what occurs to me to be important, that we may not be giving judgment upon a matter that has not been thoroughly understood.

Mr. GROVE: I am much obliged to your lordship. Grant, for a moment, that some slight portion of oxide is formed, and need not be removed, that would not indicate to the public that the oxide is what purifies. Mr. Laming, at page 5, says:—"I make use of the chloride of calcium for the purification of coal gas." Admitting, for a moment, that some small portion of oxide may be produced as an adjunct to that process, that is not the thing indicated to the public. It is a different product substantially, and a different result obtained. The one is chloride of calcium, for getting rid of ammonia; and the other is hydrated oxide, for the purpose of getting rid of sulphuretted hydrogen. Mr. Hills says:—"I do not claim peroxides of iron or manganese made at a red heat, or the oxide of iron mixed with chloride of calcium." Mr. Hills disclaiming this mixture, where chloride of calcium is substantially the main ingredient. The clause in Laming's patent was not relied on, in consequence of the other becoming the prominent point as to the question of the carbonates; and I submit to your lordships that, not only upon the specification, but also on the evidence adverse to us, it stands that there is—I do not care how transitory—such a thing as this "carbonate." The evidence of Dr. Taylor, Mr. Warrington, and Mr. Redwood, all shows that Mr. Laming's process will form carbonate of iron. The other scientific witnesses substantially say the same thing. Professor Miller, in his re-examination, says, "I am not now aware of anybody using the hydrated peroxide before the plaintiff. The hydrated oxides were part of Mr. Hills' discovery." In his cross-examination, he

says, "I have read Croll's patent, and I have read Laming's;" and then he states that which I read to your lordships. Mr. Dugald Campbell, the next witness, says the same thing in stronger terms:—"I read Mr. Croll's patent about a month ago. I also read Mr. Laming's about the same time. I knew of the patents some years ago; perhaps three or four. Notwithstanding these patents, the plaintiff's is a new invention." Mr. Miller uses the term "hydrated peroxide." Mr. Campbell says the plaintiff's was a new invention; and how can it be said that there was no evidence to go to the jury?

The LORD CHIEF BARON: If Laming's patent contains it, it is not calling twenty witnesses, however respectable or scientific, or however free from any bias, and their saying it is new, which will prevent the court from saying it is not new.

Mr. Baron BRAMWELL: Mr. Miller must be taken to have said: Laming's patent is not for the use of hydrated peroxides; but the nonsuit proceeds upon the ground that it was.

Mr. GROVE: Mr. Miller says, "I have read Laming's specification, and hydrated oxides are new, notwithstanding that."

Mr. Baron BRAMWELL: Therefore, that is not for hydrated peroxides.

Mr. GROVE: I will not occupy the time of the court further upon this point; but I say that the internal evidence of the specification, and the evidence of the witnesses, was evidence to go to the jury, that hydrated peroxides were not used for purifying gas by sulphuretted hydrogen before the date of Mr. Hills' patent. Then, the only two points reserved were the title of the patent, and the point of the native hydrates. I do not know whether the court considers it necessary I should argue those two points.

The LORD CHIEF BARON: Not at all. The points that were reserved to Sir F. Thesiger do not arise; and I do not see how they can arise upon this question.

Mr. GROVE: Then I do not know that I can add anything to what I have already, I am afraid at too great length, submitted to the court. I say that there was ample evidence to go to a jury; that this is not a question at all of prior user, but solely a question of publication; and that the publication on the face of this patent was clearly a publication of "carbonate," and not "hydrated peroxide;" therefore, that Laming's is not not an anterior publication, and does not vitiate Hills' patent.

Mr. KNOWLES said he did not think he could usefully add anything on this point to what had already been said.

Mr. HINDMARCH followed on the same side. He said: I submit to your lordships that there is sufficient here to show to the court that there was a question of fact for the jury to determine; and I apprehend, if there was a question of fact, however small or however minute it may have been, that ought to have been left to the jury to be decided by them. I would refer your lordships to the case of "Steiner *v.* Heald," 6 *Exchequer*, p. 607. That was a patent taken out for applying to spent madder the same process as before the date of the patent was applied to fresh madder; and the Lord Chief Baron directed a verdict for the defendant, on the ground that, under the circumstances, the patent could not be supported. A bill of exceptions was tendered, and the case went to the Exchequer Chamber on a writ of error; and, in giving judgment, awarding a *venire de novo*, the learned judge said:—"If, therefore, the patent be good, it must be on account of the old contrivance being applied to a new object under such circumstances as to support the patent. Now, 'spent madder' might be a very different thing from 'fresh madder' in its properties, chemical and otherwise. Or it might be in effect the same thing as 'fresh madder' in its properties, chemical and otherwise, with the difference only that part of its colouring matter had been already extracted. Again, the properties, chemical and otherwise, of both might, or might not, have been known to chemists, and other scientific persons, so that they could tell whether 'fresh madder' and 'spent madder' were different things, or substantially the same thing. These points appear to us to be questions of fact, and materially to affect the solidity or invalidity of the patent, and to be questions of fact, to be found by the jury by way of inference or conclusion of fact from the evidence adduced on the trial." I cite that case, to show that if there be any fact to be determined, one way or the other, which is for the jury, that must go to the jury: and if I can show your lordships that there is a fact in this case which ought to have been left to the jury, I submit you will direct a new trial. I apprehend the Lord Chief Baron did not proceed upon the construction of the specification. What is the question of fact? What did this specification of Laming tell us on the day in which it was enrolled in Chancery?

Mr. Baron MARTIN: Is it not, what did it communicate to others?

Mr. HINDMARCH: That is the same thing. Clearly upon the testimony given by the plaintiff's witnesses, this carbonate of iron on that day bore the signification of hydrated oxide.

Mr. Baron MARTIN: Who is to determine what is the meaning of carbonate of iron?

Mr. Baron CHANNELL: As I understand the question put to Dr. Taylor, he was asked with reference to carbonate of iron sold in chemists' shops. Supposing we are of opinion that the question had relation to carbonate of iron as disclosed in this specification, how does the question of time arise?

Mr. HINDMARCH: Mr. Baron Martin, early in the morning, put this question to Mr. Grove:—Would the use of the hydrated oxide of iron be an infringement of Laming's patent? And in reference to that question, I would refer your lordships to the case of "Unwin *v.* Heath."

Mr. Baron BRAMWELL: There is a carbonate of iron stated in Laming's patent. If your witness had said, in so many words, that means hydrated oxide of iron, and no other evidence had been called, there would have been an end of it. Mr. Grove has argued that Dr. Taylor says, there is such a thing as carbonate of iron, though what is commonly so called is not so. That would have been removed if you had shown that Dr. Taylor said there is a carbonate of iron, and there is a hydrated oxide of iron, and they are different things.

Mr. HINDMARCH: The case of "Unwin *v.* Heath" shows that the specification is to be construed with reference to the date when it was published, and not a subsequent date.

The LORD CHIEF BARON: Then the question is, what information did it give to the public on the day when it was enrolled? Is there any evidence that on this day carbonate of iron bore the signification of hydrated oxide of iron? I submit there is none.

Mr. Baron BRAMWELL: It is admitted there is a carbonate of iron, and we cannot suppose that Dr. Taylor intended to negative the existence of carbonate of iron, which he admits afterwards. I understand Dr. Taylor to mean there is a carbonate of iron; but the material which I suppose you are asking about is not so. I do not understand Dr. Taylor to have done anything more than say this: there is a substance which is carbonate of iron, but the material so called is not carbonate of iron, but hydrated oxide of iron. It is incontestable that there is a carbonate of iron, and to suppose that Dr. Taylor did not know what everybody else admits to be the case is out of the question.

Mr. HINDMARCH: Dr. Taylor says, "The exact nature of it was not so well known as it is now."

Mr. Baron CHANNELL: Mr. Grove contended that Dr. Taylor was asked, and answered with reference to the material called carbonate of iron; and he must be supposed to have been interrogated and answered with reference to that which is now sold in chemists' shops. If so, the question of time is open.

Mr. HINDMARCH: The specification was not put before the witness, and his attention was not called to it. They carefully avoided mentioning Laming's specification throughout. They called our attention to Croll's. He says, "The exact nature of it was not so well known then as it is now;" and the all-important question was—In the month of May, 1848, was it a thing known to the world that the hydrated oxide of iron was the same thing as that which is called a carbonate? If it was not known then, I say there is no sort of evidence upon which the Lord Chief Baron could proceed in order to give the directions to the jury which he did.

The LORD CHIEF BARON: What do you say was the question which should have gone to the jury?

Mr. HINDMARCH: In the month of May, 1848, did the carbonate of iron and the hydrated oxide of iron mean the same thing?

The LORD CHIEF BARON: There are one or two words in the English language which have changed their meaning. The word "let," which formerly meant "to hinder," now means to "permit;" the word "prevent," which formerly meant "to go before and prosper," now means "to stop and hinder." If a question arises as to the sense in which either of those words is used in a document, are you to ask the jury when the word changed its ordinary import?

Mr. Baron BRAMWELL: I do not read that as a question of fact. If I had been directing the jury, I should have said there is a carbonate of iron, and this carbonate of iron is found in some instrument, and must be taken to mean carbonate of iron, properly so called; but it may have a secondary meaning, and, if so, it must be applied in that sense. But those who say it has got a secondary meaning must make it out, and establish such facts as necessitate its having that secondary meaning. Now, here are certain facts, and I leave those facts to you. The facts alleged are, that carbonate of iron cannot be made. Do you believe that? If you are of opinion that the production of carbonate of iron, as described in his specification, is impracticable, why then he must be taken to have used the words carbonate of iron in the sense of hydrated oxide.

Mr. HINDMARCH: When I said carbonate of iron and hydrated oxide, I meant the carbonate of iron, which is spoken of in the *Pharmacopœia* at the date of this specification, was known to be hydrated oxide.

Mr. Baron MARTIN: Can you tell me any case where it has been held that, where a difficulty arises on the construction of a document, the question is not one for the judge to decide just as he does on the admission of secondary evidence?

Mr. HINDMARCH: None, except the case which I called your lordship's attention to of "Steiner *v.* Heald."

Mr. Baron BRAMWELL: Suppose this case: "I give my son John my estate so and so." Somebody claims the estate, and says, "I was that man's son." True, he is an illegitimate son, upon which the defendant in the action says, "Yes, but I will show that he had got a legitimate son;" and upon that the plaintiff says, "I deny it." If there was a legitimate son John, the will was in favour of the legitimate son, but if not, in favour of the illegitimate son. Surely the judge must leave it to the jury to say whether there was a legitimate son or not. So, in like manner, if the primary meaning of "carbonate of iron" be carbonate of iron, before you can get the secondary meaning you must have the facts determined.

The LORD CHIEF BARON: Carbonate of iron was known as hydrated oxide of iron before chemists were at all aware that it was not the real carbonate of iron.

Mr. HINDMARCH: That was not left to the jury, and I submit that that was a question which ought to have been left to the jury to decide.

Sir F. THESIGER: Your lordships will recollect that what I contended for was, that the meaning of the specification was a question entirely for the court, and that the court would be assisted by evidence with regard to any technical or scientific meaning of expressions, and that, having had that evidence before them, the court would decide what was the meaning.

The LORD CHIEF BARON: Probably this may be the state of the law. If you must have the facts, as in the case my brother Bramwell has put, namely, whether John was the legitimate son, there being another person of the same name illegitimate, and if those facts are elements in the decision of the court in construing the will, the jury must find the facts. But it may be that my brother Martin, who has thrown out the other view, is quite right, that if it is a question what a word means, that is not to go to the jury at all. The judge is to hear the evidence, and having heard it, he is to form his own conclusion, subject to being corrected, if he form a wrong one, by the court above; just as in a question of secondary evidence. There even the facts he must decide; for if a question arise whether a deed is lost or not, so as to admit secondary evidence, you do not call in the assistance of a jury to say whether it is lost or not. The judge decides, "I think, upon the evidence, the deed is lost; and, therefore, I think secondary evidence may be taken."

Sir F. THESIGER: The judge would have to decide, according to the best of his judgment, which was the correct meaning of the word, obtaining information by judging of the evidence of the witnesses.

Mr. Baron MARTIN: All the witnesses, as I understand, concur in stating that there is such a thing as pure carbonate of iron. It is a thing manufactured, but it requires to be hermetically sealed, because, when exposed to the air, it immediately ceases to be so. But there is another substance which is well known as carbonate of iron, which you get at shops, and that is the same as hydrated oxide of iron. My impression is, that it is for the judge to say which of those two things the carbonate of iron, as contained in the written document, means.

Sir F. THESIGER: Suppose there had been a question whether there was such a thing as carbonate of iron. That would be a question for the jury.

Mr. Baron CHANNELL: Both parties agree that the construction of an instrument is for the judge. The contest is, that there was some conflict of evidence, and the evidence upon that point should be left to the jury.

Mr. GROVE submitted that the question which his lordship ought to have left to the jury was—Does that portion of Laming's patent which mentions carbonate, point out to the plaintiff the use of hydrated oxide for purifying gas from sulphuretted hydrogen?

Mr. Baron BRAMWELL: I am by no means sure that that question ought to be left in those terms. I will state what is my notion of the true question. The defendant says, your invention is not new. The plaintiff says, show me anything in which my invention is published. The defendant says, I will: Laming's patent, published six years ago, is a publication of your invention. Then it must be a publication of the invention of hydrated oxide

of iron, upon which it is put into the hands of the judge, who is to construe it. He says, I see nothing here about hydrated oxide of iron—the word is carbonate; now carbonate of iron is not hydrated oxide of iron. Then the defendant says, but I show you that here I must mean it, and I will prove it in this way, I will show you that it is practically impossible to make, keep, or use true carbonate, and that what is popularly so called is hydrated oxide, and I will show you that the process described here for using it is the process of your patent. I think the judge ought to have said, if you establish that as a fact, I will hold that this is a description by a wrong name of hydrated oxide of iron. But then, if there were conflicting evidence on the matter, that conflicting evidence, to my mind, ought to go to the jury. It is said here that all the witnesses concur in stating that this is a description of hydrated oxide of iron and of its production. If all the witnesses did say so, including the plaintiff, I am strongly inclined to think that the plaintiff would still have been at liberty to insist on its going to the jury. But supposing that were not so, and my lord might have said, I shall act on the unanimous testimony of all the witnesses, without leaving it to the jury, I am at a loss to see, upon this evidence, that all the witnesses do say that this is a description of the use and production of hydrated oxide of iron. I cannot see that they say so, and, in my opinion, they do not say so.

[Their lordships here conferred for some time.]

Sir F. THESIGER: Your lordships are aware that there are some points reserved to me upon which I am entitled to maintain my nonsuit.

The LORD CHIEF BARON: If those reserved points affect the disposal of the cause, you are entitled to be heard upon them.

Mr. Baron CHANNELL: I understand there are two points expressly reserved for you, which, if in your favour, would go to a nonsuit. We shall not make the rule absolute for a new trial without hearing you.

The LORD CHIEF BARON: I think we had better hear those points.

Sir F. THESIGER: The first point is, that the title does not cover part of the invention, which still remains claimed under the disclaimer. In considering this question, it will be very important indeed to call your lordships' attention, in the first place, to the original title in the plaintiff's patent. The original title was, "An improved mode of compressing peat for making fuel or gas, and of manufacturing gas, and of obtaining certain substances applicable to purifying the same." In the claim there is this revivifying process, which is the only one to which your lordships' attention need be directed. It was the fourth claim in the original specification, but is the second under the disclaimer. "Fourthly, Repeatedly renovating or re-oxidising the said purifying materials by the action of the air, whenever they, from time to time, cease to absorb sulphuretted hydrogen, so that they may be used over and over again to purify the gas." There is no doubt that that was covered by the original title. By the disclaimer the title is altered to "An improved mode of manufacturing gas." Your lordships observe that the words "obtaining certain substances applicable to purifying the same," are omitted from the title. I do not trouble your lordships with the first part, with regard to the peat, which is all omitted. It stands merely "An improved mode of manufacturing gas." Is that title sufficient to cover this reviving process? I contend that it is not.

Mr. Baron CHANNELL: The original title comprises three things: you say the middle one only is left.

Sir F. THESIGER: The middle one only is left. I apprehend it does apply to this reviving process now that it is an enlargement of the patent, because the title originally had the addition of "obtaining certain substances applicable to purifying the same," which was intended to apply to this reviving process. Now, my lords, I think I may fairly consider this material which is so obtained, the hydrated oxide, as the machine which is used for the purpose of the process. I think that will not be an unfair illustration of my argument. What is the object of exposing that material after it has become saturated with the sulphur to the atmosphere? It is to renovate and renew its powers: in fact, to repair the machine. It is nothing more nor less than the mode of repairing that machine, which is to be used for the purpose of the process, to be used again; and, therefore, I apprehend that it does not come at all within the title, "An improved mode of manufacturing gas." It is not a mode of manufacturing gas at all. It is merely enabling the patentee to use those materials which have been previously used over again. It is an economical mode, undoubtedly, because without the power of renovating these materials they must have been newly supplied upon every occasion; and, if I am right in the view which I am presenting to your lordships, by way of illustration, that this is really in the nature of a machine, I apprehend that it is nothing more than a mode of repairing that machine, or renovating that apparatus, and is not covered by the title.

Mr. Baron BRAMWELL: Do I understand you rightly that the invention, which is retained by him under his amended patent, is the entire operation? "My improvements in the purification of gas consist of a method of purifying it from sulphuretted hydrogen, cyanogen, and ammonia, by passing it through the following porous material, and of renovating the material employed after it has become inert." I thought you said that his patent taken with the disclaimer was only a patent, in truth, for cleansing?

Sir F. THESIGER: Oh no, my lord; he claims the use of the hydrated oxide for the purpose of purifying the gas from the sulphuretted hydrogen.

Mr. Baron BRAMWELL: And the mode of reviving his apparatus?

Sir F. THESIGER: Undoubtedly. I admit, of course, that "An improved mode of manufacturing gas" is satisfied and answered by that part of the specification which claims the use of the hydrated oxide for the purpose of purification. Now, your lordships will see the reason of my illustration of the machine. I say this material which is so employed is a machine which has been used in the manufacture of gas in that improved mode which is claimed in the specification.

Mr Baron CHANNEL: You say that the purifier is a machine used in the manufacture of gas, and this is a more economical and better purifier; and that the patent taken out for "An improved mode of manufacturing gas" would not cover a claim for the repair of the machinery used.

Sir F. THESIGER: For repairing machinery, because it really is nothing more than putting the materials in such a state as will enable them again to effect the process which is patented under the claim for the use of hydrated oxide.

Mr. Baron BRAMWELL: The effect of that, then, is, that the title should have been "An improved mode of manufacturing gas, and a mode of cleansing the machine by which it is manufactured."

Sir F. THESIGER: Certainly.

Mr. Baron CHANNELL: The second claim goes beyond the title.

Sir F. THESIGER: Yes, my lord. There is a case upon this very subject, the case of "Croll *v.* Edge," 9, *Common Bench*, 479. The marginal note of that case is as follows:—"The plaintiff declared against the defendant for an alleged infringement of a patent for 'Improvements in the manufacture of gas for the purpose of illumination, and in the apparatus used when transmitting and measuring gas.' The defendant pleaded, fourthly, that the plaintiff did not particularly describe his invention, and in what manner the same was to be performed, &c.; sixthly, that the invention described in the specification was a different invention from that for which the letters patent were granted, by reason whereof the letters patent were void. At the trial the plaintiff put in a specification, the title of which described the invention to be of 'Improvements in the manufacture of gas for illumination, and in the apparatus used therein, and when transmitting and measuring gas,' and which stated it to relate,—'first, to a mode of manufacturing gas for the purpose of illumination; secondly, to improvements in setting and heating clay retorts for making coal gas; thirdly, to a mode of manufacturing clay retorts; fourthly, to improvements in apparatus for measuring gas when it is being transmitted to the consumer:' held that there was a material variance between the invention specified, and that described in the title of letters patent; and, consequently, that the letters patent were void." Mr. Justice Maule, in giving the opinion of the court, said: "It appeared that the letters patent had been granted for the objects mentioned in the declaration. The patent was properly described in the declaration as a patent for 'Improvements in the manfacture of gas for the purpose of illumination, and in the apparatus used when transmitting and measuring gas.' No specification appeared to have been enrolled of any patent with that particular title; but a specification was enrolled, reciting the grant of a patent with a title somewhat similar to that mentioned in the declaration, but with the additional words 'therein and' interpolated between 'used' and 'when,' so that the specification as enrolled was in its title or introductory part represented as being a specification of an invention for 'Improvements in the manufacture of gas for the purpose of illumination, and in the apparatus used therein, and when transmitting and measuring gas.' The insertion is slight as to the number of words, but it adds most materially to the meaning of the sentence, and extends substantially the grant of the crown; because the title, as suggested in the specification, represents the patent as being a patent for different kinds of apparatus used for two distinct things—viz., the making of gas, and the transmitting and measuring it. The making of gas is a chemical operation which has now become familiar ,and consists in evolving from coal, or other suitable material, ordinarily by means of heat, the gas which is contained therein or capable of being produced therefrom. The improvement of the apparatus used in that process is described in the specification as one of the objects of the patent. The other object which is mentioned in the title of the specification is, the improvement of apparatus used in 'transmitting and measuring gas.' The transmission and measuring of gas, as is well known, are performed by sending it through pipes and through a certain instrument called a meter, on its way to the premises of the consumer. The two objects thus referred to are evidently perfectly distinct from, and independent of, each other—the manufacture of gas being one thing, and the issuing it for consumption another. Now, the patent granted, was a patent 'For certain improvements in the manufacture of gas for the purpose of illumination, and in the apparatus used'—not 'when manufacturing gas,' but 'when transmitting and measuring gas.' The title did not profess to comprehend improvements in any apparatus used in making gas. The patentees, in representing to the crown the nature of the invention which they had discovered, did not give the crown notice that they claimed the exclusive use of any apparatus for making gas. The title of the patent, as described in the specification, is one which comprehends as well improvements in apparatus for making gas, as improvements in apparatus used in its transmission and metage. And, when the body of the specification is looked at, one main part of the patentee's claim consists of what may be, and probably is, a new mode of manufacturing clay retorts—an apparatus used in the manufacture, and not in the transmitting and measuring of gas. Any person reading the specification for the purpose of ascertaining what the patentees claimed as their exclusive right, would see, without doubt, that a material branch of their claim, and of the patent, the specification of which they were professing to enrol, was an improvement in apparatus used in the manufacture of gas. Now, no patent at all has been granted to them for that: and it appears to us to be difficult to suppose that the enrolling a specification in the terms here used can have been intended as otherwise than an attempt on the part of the grantees to remedy an oversight, and so to alter and enlarge the patent." Therefore, in that case, it was considered that the claim was for the manufacture of clay retorts, or in the transmission of gas. It was held that that was not covered by the title, and it appears to me, with submission, to be a direct authority in favour of this objection, which I made at the trial, and which was reserved to me, that now, as the title stands, there is nothing whatever in the title which extends to this claim of renewing the apparatus, or, as I may say, again repairing the machine which is to be used for the purpose of an improved mode of manufacturing the gas. There was another question also upon which I claimed, upon the specification itself, a nonsuit. In page 15 he claims, "Firstly, the purifying coal gas from sulphuretted hydrogen, cyanogen, and, more or less perfectly, from ammonia, by passing it through the precipitated or hydrated oxides of iron." There is a little ambiguity in the expression here, arising out of the evidence of Dr. Taylor, who told us that artificial hydrates were precipitated; that all precipitated oxides were hydrated; but that all hydrates were not precipitated: and he further told us that there was an artificial hydrate, and also a native hydrate made. There is a little ambiguity here. Dr. Taylor said that he should understand, by the use of the term "precipitated," hydrated; but the words are, "through the precipitated or hydrated oxides of iron, or the sulphates or oxychlorides of iron." Therefore, whether he means to say precipitated, meaning hydrated, or precipitated, or hydrated, perhaps it may be difficult to understand, upon reading this specification; but I will take it that he uses the term generally, and means hydrated oxides. Hydrated oxides consist of two descriptions—the artificial and the native; and it was proved that the native oxides would not be at all efficient for the purpose of purifying gas.

The LORD CHIEF BARON: Too compact.

Sir F. THESIGER: Too compact, my lord. If the plaintiff has claimed all hydrated oxides, then he has included in his claim the native oxides, which will not answer the purpose; or, if he meant to claim the hydrated oxides only, and which would answer the purpose, he has not pointed out which those are. He has put the public to the necessity of making experiments; and therefore his specification is bad. At the trial I cited the case of "Stevens *v.* Keating," *2nd Exchequer Reports*, 772, which is a case familiar to my Lord Chief Baron. I will read the marginal note of that case, which is—"The specification of a patent for 'a process or method of combining various materials so as to form stuccoes, plasters, and cements; and for the manufacture of artificial stones, marbles, &c., used in buildings.' After stating the invention to consist in producing certain hard cements of the combination of the powder of gypsum, powder of limestone and chalk, with other materials—such combinations being (subsequent to their mixing) submitted to heat—described the method or process of making a cement

from gypsum to consist in mixing with powdered gypsum strong alkali (*e.g.*, best American pearlash), dissolved in a certain proportion of water; this solution to be neutralised with acid (sulphuric acid being the best); the mass to be kept in agitation, and the acid to be added gradually till the effervescence should cease; and then a certain proportion of water to be added (if other alkali were used, the quantity to be varied in proportion to its strength); and the mixture, having been brought to a proper consistence by the further addition of powdered gypsum, to be dried in moulds, and finally subjected to a furnace capable of producing a red heat. The description of making the cement differed little from that of the preceding process. The specification, after proceeding to state the mode of using the cement so made, concluded by stating that other alkalies and acids, besides those before mentioned, would answer the purposes of the invention, though not so well, and that the inventor claimed the method of process thereinbefore described—Held, that the specification was bad; for that either the inventor claimed all acids and alkalies, or only those which would answer the purpose; in the former of which cases, as some acids and alkalies would not answer the purposes of the invention, the specification was therefore bad; and in the latter it was bad, for not specifying those acids and alkalies which would be found to succeed." My lords, that seems to be a distinct authority for showing that this specification, claiming as it does, without any qualification or exception, all hydrated oxides of iron, is too large, because it necessarily comprehends hydrated oxides, which will not answer the purpose. There is no attempt here to distinguish between those hydrates which will answer the purpose and those which will not. It appeared from the evidence that there were experiments made by the different witnesses on native and other hydrates, and they found that it would not answer. Under these circumstances, I submit to your lordships that on this ground, the specification is bad, and we are entitled to a nonsuit.

Mr. HILL: On the first point, the point with regard to the title, your lordships will bear in mind the evidence given at the trial by Dr. Taylor: that the use of the hydrated oxide of iron in purifying gas converts it into a sulphuret of iron, and it ceases to be of any effect for purification. It is admitted that that is an improvement in the manufacture of gas. But then next he says, "I claim a mode of converting that sulphuret of iron into oxide of iron." Is that an improvement in the manufacture of gas? I say that the illustration of my friend, Sir F. Thesiger, directly applies. I claim, secondly, a mode of improving or renewing the machine, by which machine, when so improved or renewed, I may then purify more gas. The case of "Croll *v.* Edge" is a distinct authority on the point. We have the same issues here as the issues raised in that case.

Mr. Baron CHANNELL: There was a good deal of discussion in the Common Pleas, in "Croll *v.* Edge," as to what plea should be allowed.

Mr. HILL: Here is this, that the invention described in the specification is another and different invention to that for which the letters patent were granted. The point is taken, of course, as applying to the altered specification.

Mr Baron CHANNELL: I remember, after the judgment was delivered in "Croll *v.* Edge," there were two or three applications made to the court, not to alter the substance of the decision, but to consider on what plea the objections were to be allowed.

Mr. Baron MARTIN: Does not "gas" in the title mean gas that ultimately goes to the consumer?

Mr. HILL: Perhaps it does, my lord.

Mr. Baron MARTIN: Then "an improved mode of manufacturing gas" should be "using in that manufacture a substance:" that is to say, this substance, "which, having purified one volume of gas, has been submitted to the air, and used to purify another."

Mr. HILL: Rendered fit to purify another. The plaintiff says, I make my instrument a machine fit to purify after you have manufactured a portion of gas: therefore it is necessary that this machine should have something done to it, so as to convert it into a machine. In "Croll *v.* Edge," the improved mode of preparing the retort was held not to be within the specification.

Mr. Baron MARTIN: What are the words?

Mr. HILL: The title in "Croll *v.* Edge" was "Improvements in the manufacture of gas for the purpose of illumination, and in the apparatus used when transmitting and measuring gas." A patentee is required to describe the invention for which the patent has been granted. The invention for which the patent has been granted is manifest by the title, and he must be therefore careful by his specification not to enlarge that for which the patent has been granted. He has no right to include anything in the specification which is not within the description of the title; and here the question simply is, whether a mode by which the machine is rendered fit to be used again—that is, converting the sulphuret into an oxide—can be called any portion of the manufacture.

Mr. Baron MARTIN: In some vessel used in the manufacture of gas, there is a deposit to a very great extent in this operation of gas manufactured by a machine; a man discovers that by doing something he can cleanse that, and enable the same machine, which had always previously been thrown aside as useless, after being used once, to be used again—might he not call that "an improved mode of manufacturing gas?"

Mr. HILL: That is hardly a fair illustration, for this reason, that the chemical combination in this case changes the thing altogether; it ceases to be an oxide. There it is only a mode of cleaning his vessel, but here the substance has become chemically changed. You have to convert the substance back again into that only substance which is fit for purifying gas.

Mr. Baron BRAMWELL: Suppose he had not mentioned this mode of purifying, and a chemist then had said, "that will never pay, because it will be too costly, unless you can use the material over again." Of course, his patent would have been bad then.

Mr. HILL: It would be useless. Will your lordships see what the plaintiff has disclaimed. His old title was: "An improved mode of compressing peat for making fuel or gas, and of manufacturing gas, and of obtaining certain substances applicable to purifying the same." He disclaims "obtaining substances applicable to purifying the same." It is omitted altogether; and he says, I now confine myself to "An improved mode of manufacturing gas." It is no longer obtaining the oxide of iron by converting the sulphate into oxide, but he says, I now merely claim an improvement in the manufacture of gas. He himself is the person who created the difficulty. He limits himself. There are several things for which the old patent was taken out which were comprised within that title, and one of those was this very thing—the obtaining of substances applicable to the purification of gas. I, therefore, submit to your lordships that this case comes directly within "Croll *v.* Edge;" and those pleas under which the judge says, ultimately, in giving the judgment of the court, "We, therefore, think the specification insufficient, and that the objection properly arises on the sixth plea." That is, that the specification was for another and different invention, which is the very same plea that we have in this case.

Mr. WEBSTER followed on the same side.

Mr. KNOWLES: I will show the court that when my friend admits, as I understand he does, that this title might have comprehended the revivifying process if originally the title had only stood as it does now, my friend is out of court, because, originally, the only words applicable to the revivifying process were the words we retained—a new mode of manufacturing gas. My friends have entirely mistaken the meaning of the last words in this title. We began with a new mode of compressing peat, or making fuel or gas. That is disclaimed, "and of manufacturing gas," that is retained, with the words "improved mode." Then comes, "and of obtaining certain substances applicable to purifying the same." My learned friends assume that these words "obtaining certain substances applicable to purifying the same," are intended to point to the process of revivification. They are not at all. We begin in the second page with the description of the mode of compressing peat. That answers the first title. Then we come to the mode of manufacturing gas, and the improvements in the purification of gas. I call your attention to page 4. "As soon as the material ceases to purify the gas from sulphuretted hydrogen, the gas is to be shut off from the purifier, and a communication is to be opened to the external air." That is the revivifying process, and has nothing to do with the obtaining certain substances, nor is it meant. When you come to page 6 you find these words:—"My mode of obtaining certain substances applicable to purifying gas, consists of a method of making the precipitated oxides and sulphates of iron." It is to this that that applies. When you strike that description out you strike out so much of the title as applies to it. Then we leave "an improved method of purifying gas," which was all that describes the revivifying process in the original, and my friend admits that that was perfectly good. Is not the revivifying process included in the improved mode of manufacturing gas? What is the importance the courts give to the title of a patent—is there anything in a title that deceives? The revivifying process is a mode of manufacturing gas. Admitting the air into that revivifying process—is not that a part of the method? What is it they say is not included? You put the hydrate of iron into the receiver, and when it is charged with sulphur you open the purifier and you allow a current of air to go through. Is not that part of the process of manufacturing gas? In "Croll *v.* Edge," the parties altered the title of the patent altogether, and sought to apply it to something not included in the original title at all Therefore, I say that "Croll *v.* Edge" has nothing to do with the case. In the case of "Sturn *v.* Delarue," which has been cited to the court, the decision goes much further than the court is asked to go to-day, in supporting the title of the patent; and I say I have shown that my friends are quite wrong in the grounds upon which they have based their argument. "The obtaining certain substances" had nothing to do with the revivifying process; and I say the title is amply large enough to include the revivifying process as "an improved method of manufacturing gas." My learned friend's objection is, that we do not point out the distinction between artificial hydrates and native hydrates; and if you look at the manner in which this part is specified, you will find that Dr. Taylor was perfectly right when he read this as applying to artificial hydrates. Your lordships will find, by referring to the specification, that it is precipitated oxide which Mr. Hills claims. He says, in page 12, "I take the subsulphates, the oxychlorides, or the hydrated or precipitated oxides." What he means is, "I take all precipitated oxides." He does not point here to the native oxides at all, but to the artificial oxide which is prepared by precipitation.

Mr. GROVE: The only question is, has the patentee, by his conduct, specification, and disclaimer, in any way shown that he has altered the invention, which was the case in "Croll *v.* Edge?" I submit that he has not. Then as to the point about hydrated or precipitated, not only are the words used doubly throughout, but in the first part where he uses them he says, "I take the hydrated or precipitated oxides of iron, which I prefer to use in rather a damp state," which would be the very mode in which they would exist as precipitated.

Mr. HINDMARCH followed on the same side, and, at the conclusion of his address, their lordships stated that they would reserve their judgment.

THAMES POLICE COURT.

FRIDAY, APRIL 24.

THE GREAT CENTRAL GAS-WORKS.

Mr. Alexander Angus Croll, the engineer of the Great Central Gas-Works, on the north-east side of Bow Common, in the parish of Bromley St. Leonard, Middlesex, appeared before Mr. Yardley to answer a summons taken out by Mr. Edward Fulcher, inspector of nuisances, and sanitary inspector for the Poplar District Board of Works, and which summons charged that the following nuisances existed on the gas company's premises:—Several open pits for the reception of refuse from gas purifiers; two open tar tanks; open ammoniacal liquor tank; and method of slacking coke ovens by foul water, giving off filthy effluvia.

Mr. ELLIS, solicitor, conducted the prosecution for the Poplar District Board of Works and the principal members of that board. Mr. C. C. Ceely, their clerk, and a great number of influential inhabitants of the district, whose health has been effected by the operations of the gas company, were in attendance. The secretary, and many shareholders of the Great Central Gas Company, were also present, and the proceedings, involving important interests on the one hand, and the health of the population of a large district on the other, created more than ordinary sensation.

Mr. *Croll* admitted that a nuisance did exist, and stated that he reported upon it so far back as February, 1854, and recommended that the process of purifying the gas with wet lime should be altered, and purification by means of oxide of iron be substituted.

The secretary of the gas company said there was every wish on the part of that body to carry on their operations in the least offensive manner possible. There was no difference of opinion as to suppressing any nuisance which might exist, but there was a little difference of opinion as to the means by which it could be effected.

Mr. YARDLEY said this was a complaint on the part of the representatives of the parish, and if it was proved a nuisance did exist, he must order it to be abated. He would rather this matter was amicably arranged instead of his being called upon to make an order and to enforce it. He had no doubt the parish officials did not prefer the complaint against the gas company from any hostile motive, for the company were large ratepayers.

The SECRETARY: We are very large ratepayers.

Dr. ANSELL, medical officer of health for the Poplar District Board of Works, said the nuisance was of a threefold character, and he particularly complained that the refuse water from the lime, after it had been used in purifying the gas, was again used to cool the hot coke from the retorts, and the most offensive vapours were throw off and diffused over the locality. He must insist on pure water being used. He produced a bottle of the refuse water, which he took out of one of the blue billy pits on the gas-works. It was a vile smelling compound. The premises altogether were a

great nuisance. There were open tar-tanks, open tanks containing ammoniacal liquor, and seven open pits for the reception of refuse from the gas purifiers.

Mr. *Croll* said that all the tanks and pits could be covered over, and he would recommend that to be done without delay; but the apparatus for purifying gas by oxide of iron would take several months to construct, and be attended with an expense of some thousands of pounds. He had recommended it to be done a long while ago, but the directors had not come to any determination on the matter. His own engagements with them would terminate in September. With respect to the use of foul water in cooling the hot coke from the retorts, that could not have happened, because, if the refuse water had been used for such a purpose, the nuisance would be fearful.

Dr. ANSELL: So the nuisance is fearful; it is most horrible.

Mr. *Croll:* The people in the retort-house could not stand it if the refuse water was used.

Mr. ELLIS said he was prepared to prove his case in the most complete manner, and that foul water had been used in slacking glowing coke. He would prefer having the magistrate's order for the suppression of an intolerable nuisance to waiting speculatively for six months. The large tanks holding ammoniacal liquor gave off the most odious fumes.

Mr. *Croll:* I own they are not agreeable.

Mr. ELLIS: And the receptacles for refuse matter cover an area of upwards of 16,000 superficial feet.

Mr. *Croll* promised that no refuse water should be used, and all the tanks and pits should be covered over; but he wanted seven months to change the purification.

Dr. ANSELL: Would the magistrate be kind enough to take a smell of the gas-works before he gave his decision? (A laugh.)

Mr. YARDLEY: That would do no good, and might do me harm. (Laughter.)

Dr. ANSELL said the water from the well on the gas company's premises ought not to be used in the cooling process. The purest water—that supplied by the East London Water-Works Company—should be used.

The SECRETARY of the gas company said the water in the well on the company's premises had been analysed by Dr. Letheby, of the London Hospital, who said it was as free from sulphuretted hydrogen as the water of any ordinary well. He was very sorry he had not brought that report with him.

After a long discussion,

Mr. YARDLEY said it was admitted on all sides that the nuisance was of a threefold character; and he suggested, instead of making an order at present, that the summons be adjourned for six weeks, on the defendant undertaking to cover over the tanks and the blue billy pits, and prevent the escape of any offensive effluvia; also, that none but pure water should be used in cooling the glowing coke from the retorts; and that a longer time should be allowed to change the purification of the gas.

The magistrate's suggestion was agreed to, and a minute of the arrangement was entered in a book by Mr. Bowdler, the clerk.

Mr. FULCHER asked for costs.

Mr. YARDLEY: Yes; the gas company will have to pay the costs when the case is finally arranged.

The parties then retired.

Miscellaneous News.

COMMERCIAL GAS COMPANY.

The Ordinary Half-Yearly Meeting of this Company was held at the London Tavern, on Friday, the 17th inst., to receive the report of the directors, and to declare a dividend to the 31st day of December last—J. HOLBERT WILSON, Esq., (Deputy Chairman) presided.

The CHAIRMAN said: Before I commence the business of the day, I have a promise to fulfil. I have been requested by our worthy chairman (Mr. Salisbury Butler, M.P.) to apologise to you for his absence on the present occasion. You are all aware of the great fatigue and excitement he has recently undergone, and I have to state to you that he feels a perfect cessation from work to be absolutely necessary to re-establish his health. I am quite certain that, though we may regret the fact of his necessary absence from this meeting, we shall not grudge compliance with his request; and that it is the sincere wish of us all that the repose which he is enjoying may be the means of restoring him to his accustomed strength and activity, and be the means of preserving so valuable a life to his family and to the world. (Hear, hear.) In thus apologising for him, I do not wish to cast any gloom over your minds; and am, therefore, happy to tell you that I have recently seen him, and have every reason to hope that in a few days he will be perfectly recovered. Gentlemen, I have said a word for my friend; let me now say a word for myself. I have been called upon at the last moment to take the place of our worthy chairman, and I must throw myself upon your indulgence, and crave a little of that consideration and kindness which on some previous occasions you have not withheld from me. I trust that with that I shall be enabled to conduct the business of the day to your satisfaction. It is not my intention to occupy time so valuable as yours is with any detail of the works of the company—sufficient for me to say, I believe our concern is in a sound and healthy state; and that not a gentleman will leave this room with any feeling of regret that he has invested his capital in the undertaking. (Hear, hear.) I shall now ask the secretary to read the usual documents, but before sitting down I ought perhaps to mention one other thing. We are met here at a much later period in the month than we have ever done before, or than we wish and intend to do in future. This is owing to the business of the general election, which has occupied so much of the attention of the country during the last few weeks. It was the hope of our chairman, in fixing so late a day, that he should have had the pleasure of meeting you on this occasion; and he would have done so, but for the circumstance to which I have alluded, and which has deprived us of the able assistance he has always given us.

The SECRETARY (Mr. Jaques) read the notice convening the meeting.

The CHAIRMAN: I will proceed now to affix the corporate seal to the register of proprietors..

Mr. BOX: Previous to doing so, I beg to ask whether the register of this company has been examined and found correct? There has been so much fraud in the commercial world of late that it seems desirable we should know before you affix the seal to our list of shareholders.

Mr. WEBB: As one of the auditors, perhaps I may be permitted to say I have gone into the matter, and have found that all is correct.

The CHAIRMAN: I may also state that we have deemed it requisite that a committee of directors should examine into the whole of the share accounts of the company. They have been engaged in that investigation since last November; not that we at all distrusted the integrity of our servants, but because we felt it desirable, in meeting you here to-day, that we should be able to state what is the exact position of our share capital. Having been thus engaged from week to week, I may inform you that the labours of that committee are so nearly brought to a close, that they are able to assure you of every thing being perfectly correct. They have traced the history of every share, from the commencement to the present time, and have found no error of any account in the matter. I am sure that it will be a great pleasure to you to learn that we have taken this trouble, and that it has resulted in so favourable a conclusion. The auditors also have gone through the accounts, and I think we may say that we are in as good and safe a position as any other company.

Mr. BOX, amidst considerable interruption, proceeded to say that he had gone over the capital account during the last two or three years, and found a discrepancy of £34.

The SECRETARY said that, assuming the honourable proprietor's figures to be right, he could only suppose that the difference arose from the payment of interest upon calls.

The CHAIRMAN said he had not the slightest doubt that, on an examination of the accounts, the apparent error could easily be reconciled. It was a great pity the honourable proprietor should occupy the time of the meeting with a supposed discrepancy of £34 in a capital of £200,000 or £300,000, when by going to the company's office at any time he could have satisfied himself at once of the strict accuracy of the accounts. (Hear, hear.)

After some further remarks by Mr. Box, which were listened to with the utmost impatience, the seal was affixed to the register of proprietors by the unanimous consent of the meeting.

The SECRETARY read the minutes of the last meeting.

Mr. BOX rose to object to the confirmation, on the ground, as he stated, that, though the minutes contained an entry that a "scheme" for a dividend was laid before the proprietors on the occasion referred to, no such scheme was, in fact, presented.

The CHAIRMAN said he did not like to have to contradict the honourable proprietor, but he had a distinct recollection of the scheme being read. (Loud cries of "Hear, hear.")

Mr. BURNELL: What is meant by the word "scheme?"

The CHAIRMAN: It is the term used in our act of Parliament. I am not prepared to say what was the full meaning intended to be conveyed by the Legislature, but I take it in general terms to mean a brief statement of the amount in hand available for dividend.

The minutes were then confirmed, and

The SECRETARY read the following report:—

Your directors have convened this meeting pursuant to the provisions of the company's Act of Incorporation, by which it is enacted that an ordinary meeting shall be held some time in the month of April.

The balance-sheet and accounts of the company, to the 31st day of December, having been signed by the chairman, and examined and certified by the auditors, will be presented and read.

The directors are gratified in being able to report a steady increase in the consumption of gas during the past half year.

The directors are of opinion that the results of the past half year's business justify a continuance of the dividend at the rate of 6 per cent. per annum; and accordingly they recommend a division of the profits for the half year ending the 31st day of December, at and after the rate of 6 per cent. per annum, free of income tax.

The directors have prepared a scheme for such a dividend, which will be presented to the shareholders for adoption.

The laying of the new main for the supply of gas to the Isle of Dogs was completed on the 30th day of October, and has continued to supply that district without interruption.

The erection of the house on the works for the engineer, together with the boundary wall, alluded to in former reports, have been completed. The engineer is now residing on the works, and the company derives the benefit of a constant supervision by that officer.

At the last ordinary meeting, the chairman mentioned that the directors were increasing the size of several of the trunk mains, and the advantages anticipated have been fully realised.

The directors, with the view of carrying out more fully these operations, have entered into a contract for the supply of a quantity of 14-inch mains to be laid from the works to Bow, and which will enable them to abandon the make of gas at the Bow station, and thus concentrate the whole manufacture at Stepney.

The attention of the directors has been called to the application to Parliament for a bill entitled "The Victoria Gas Company," for the supply of gas to North Woolwich and West Ham. This bill will be carefully watched by your directors and the interests of this company guarded.

The shareholders will have learned from the circular convening this meeting that the following directors—viz., Thomas Brushfield, John Jones, and John Solomons, Esqrs., will go out of office by rotation, and that, being eligible, they have offered themselves for re-election; and Henry Webb, Esq., auditor, will go out of office by rotation, and, being eligible, has given notice of his intention to offer himself for re-election.

The directors have only to add that they believe the affairs of the company are based upon a firm foundation; and that, with economical management, due regard being had to efficiency, there is every prospect of a continuance of the prosperity of the company.

The SECRETARY also presented the following statements of account:—

GENERAL BALANCE, DECEMBER 31, 1856.

Dr.				*Cr.*			
To proprietors, for paid-up capital			£228,145 9 6	By purchase of freehold			£8,900 0 0
British debentures			15,500 0 0	Cost of gas-works and plant			179,876 19 10
Loans			58,300 0 0	Do. Poplar			7,839 14 1
Amount due to sundry persons			15,818 1 8	Do. British			81,304 6 10
Contingent-fund, June 30, 1856	£6,774 13 4			Amount due for supply of gas	£28,368 15 11		
Half year's interest to December 31, 1856	169 7 4			Do. products	2,454 11 5		
			6,944 0 8				30,823 7 4
Profit and loss			7,891 11 2	Stock			19,300 6 3
				Balance at the bankers			4,554 8 8
			£332,599 3				£332,599 3 0

PROFIT AND LOSS. DECEMBER 31, 1856.

Dr		*Cr.*	
To amount for interest on British debentures	£ 310 0 0	By net profit for the half year ending December 31, 1856, after defraying the expenses of management, allowing for bad debts, writing off £4506. 3s. 11d. for wear and tear of plant, mains, services, and meters, and paying the income-tax	£7,891 11 2
To Balance	7,581 11 2		
	£7,891 11 2		£7,891 11 2

RECEIPTS AND EXPENDITURE, FROM JULY 1 TO DECEMBER 31, 1856.

RECEIPTS.			EXPENDITURE.		
Balance at the bankers		£8,036 8 7	Payment of dividends		£6,519 18 11
Cash received for instalments on shares	£204 6 10		Solicitors' charges		52 2 8
Do. for supply of gas	29,820 14 2		Commission to collectors		435 12 7
Do. for sale of products	9,891 9 5		Rates and taxes		837 8 10
Do. for rent of property at Ratcliff	334 14 4		Sundry persons for house on works, iron pipes, tubing, meters, &c.		10,953 11 6
Do. for loans	11,500 0 0		Directors' fees	£750 0 0	
Do. for sale of part of the British property	9,063 9 3		Auditors' fees	75 0 0	
Do. of sundry persons	904 0 8		Salaries	1,201 11 4	
		61,718 14 8	Wages	5,287 17 2	
					7,314 8 6
			Sundry persons for coals, lime, retorts, fire-bricks and clay, iron and castings		26,201 15 2
			Printing and stationery		380 2 4
			Repayment of loans and interest		11,519 18 0
			Sundry persons		273 9 8
			Rent of property at Ratcliff		404 18 4
			Paving, &c.		307 8 1
					£65,200 14 7
			Balance at the bankers		4,554 8 8
		£69,755 3 3			£69,755 3 3

The CHAIRMAN: Gentlemen, the resolution that I shall now move is, "That the report and accounts now read be received, adopted, and entered upon the minutes."

Mr. RHODES seconded the motion.

Mr. BURNELL: Before you put the question, sir, I should like to submit a resolution to the effect, "That the report be received." An opportunity will thus be afforded to any gentleman to make what remarks he thinks proper before the report is adopted.

The CHAIRMAN: I do not intend to put the question until every gentleman has had an opportunity of expressing his sentiments.

Mr. BURGESS: I should just like to say, that I really think £750 is a very large amount to give our directors every half year for devoting two or three hours each weekly to the affairs of the company. I think they should be satisfied with £1000 a year amongst them. I was in hopes that the senior director (Mr. Bratt) would have come forward and stated as much on behalf of his colleagues. (A laugh.) With regard to the affairs of the company, I believe we ought to be in a much better position than we are, as we have had very superior advantages. I am one of the trustees who sold them the land, and, after all the benefits which they have derived from it, I say I am very much surprised we have not a better dividend, and that we have nothing at all in the shape of a reserve-fund. We have nothing to fall back upon to meet contingencies; and, as we have got our plant complete, I think that after ten years' working we ought to have a very handsome sum set aside to keep the company out of danger. Then, in reference to the gentlemen who are retiring from the board by rotation, I think it would be far better if their places were not filled up.

The CHAIRMAN: That is a point which will come before us afterwards. In reference to the reserve-fund, I may remind the honourable proprietor that we have £7000 laid by for depreciation.

Mr. BOX said he wished to put several questions to the chairman, upon each of which he would like a distinct and separate reply.

The CHAIRMAN said he thought it would be a more convenient course if the questions were all put at once. He would take notes of each and reply to them, as far as he was able, altogether. (Hear, hear.)

Mr. BOX, after strongly objecting to such a course, felt it better to respect the evident feeling of the meeting, and proceeded to propose his questions. He wished to know—1st. What was the amount of the contingent-fund, and how it was invested? 2nd. What had become of the liquidation-fund, which at one period was said to amount to £1357, but which had disappeared from the accounts altogether for the last year or two? 3rd. As to the amount of loans: it was stated that the company had borrowed £58,300, and he wished to know for what purpose the loans were raised, and how the money had been appropriated? 4th. What amount had been written off in the several schemes for making dividends during the last three years and a half? 5th. What had become of the surplus profit of £108 said to be devoted to dividend, which was in excess of the actual dividends paid during the period he had last mentioned? 6th. What had been the amount of revenue derived by the company from coals used during the last half year? 7th. What was the expenditure during that period? 8th. How much was the expenditure in excess of the revenue? 9th. What accounted for such excess of expenditure over revenue during the last three years and a half? 10th. Out of what sum had the dividends been paid? 11th. The amount written off this half year was stated to be £4506, the present balance was £7581, which was only equal to paying a dividend of 1½ per cent., and leave a balance to be carried to the next half year of £347; the directors proposed to divide 6 per cent., and he wished to know where they got it from? (Much impatience being manifested, the honourable proprietor sat down, stating that he thought what he had stated would "about do for the present." Loud laughter.) There were some other remarks which he should make afterwards on the manufacturing department. (Renewed laughter.)

The CHAIRMAN: Do I understand that you have put all your questions?

Mr. BOX: Yes, I have put all I have to put bearing upon the finances of the company.

The CHAIRMAN: Gentlemen, I mentioned before Mr. Box commenced that I should have the greatest pleasure in answering all his inquiries to the best of my ability, but I ask you, as men of business, whether it is not utterly impossible for me at the moment to reply to some of those which he has proposed? (Hear, hear.) Many of his inquiries embrace a period of three years and a half, and accounts which we cannot be expected to have here to-day. I think we may at once dispose of all such questions by stating that all we have to do with to-day are the accounts just rendered, and which are now before you. The accounts of every previous half year have been submitted as these have been, having undergone the same previous examination, and they have been passed by you. (Mr. Box: Not by me!) I think neither Mr. Box nor any other gentleman can reasonably expect, at the present moment, that we should be prepared with details such as he has asked for. (Hear, hear.) But there are some questions which I can and will answer at once. The first was in reference to the contingent-fund—what is its amount, and how has it been invested? The amount at the present moment is £6944. 0s. 8d., and the mode of its investment is, in the working capital of the company. It has been felt to be more desirable to take that money for the purpose than to call up more share capital. (Hear, hear.) A portion of it—I am reminded by a brother director—was invested in the purchase of a freehold, a most valuable property which we have at Stepney; the other portion is, as I said, most advantageously employed in the working of the company; it is debited with interest at the rate of £5 per cent., or £169 each half year.

Mr. BURGESS: What is the value of the freehold at Stepney?

The CHAIRMAN: I should think you would be able to answer that question yourself, as you are the party we purchased it of. ("Hear, hear," and a laugh.)

Mr. BOX: That is not a suitable answer to give.

The CHAIRMAN: I must appeal to the meeting whether Mr. Box is in order in interrupting me. I allowed him to make his statements without interruption. (Hear, hear.)

Mr. BURGESS: My reason for asking the question was, that I thought you were referring to some land at a distance from the works; but I now find it is the ground upon which the works themselves are built.

The CHAIRMAN: The next question which Mr. Box put was as to the liquidation-fund. It certainly is not in this half year's account, but in former half years it was. It has been employed in paying off bonds and divers matters which at various periods we have brought before the shareholders; but, of course, I cannot pledge myself off-hand to all the details, and tell you, item after item, of so large an undertaking as this is. Then, as to the amount of loans; they are £58,000, and the money so borrowed forms a portion of the capital of the company. There are many of the British bond holders who had the right to claim the amount of their bonds at the end of three years. Those claims are frequently being made, and we have employed some portion of this money in paying them off as they arise. I think we have paid about £30,000 in this way. I desire to give you as much information as I can, our interests are identical, and you have a right to ask and I to give you all that lies in my power; but it is not always easy for a chairman to give what he may wish to do—clear and explicit statements in answer to questions put, without previous intimation. Therefore, if my remarks do not appear sufficiently definite you must ascribe it, not to a wish to throw dust in your eyes—(Hear, hear.)—but to the difficulty arising from being called upon on the moment to go through the labyrinth of figures which Mr. Box has interrogated me upon. (Hear, hear.) Any proprietor desiring further information, if he will come down to the works, I shall be happy to meet him, and give him every information which reference to the books of the company will afford. I now come to questions which I certainly think Mr. Box had no occasion to ask—viz., what amount has been written off for the last three years and a half, and what has become of the £108 surplus profit said to be in excess of dividends? I will merely state that this £108 still stands to the account of dividends at the bank; we have not appropriated it—there it is. We bank now at one of the joint stock banks, where we are allowed interest upon deposits; and in our separate dividend account each half year you will find the amount with its accumulations of interest. Mr. Box asks, what is the revenue and expenditure for the last three years and a half, and he also asks the same question about the present half year. Gentlemen, you have had the accounts read to you by the secretary, and you can have the items of income and expenditure read over again if you desire it.

The SECRETARY: The total amount of receipts is £69,755. 3s. 3d., and of expenditure £65,200. 14s. 6d.

Mr. BOX: That does not touch the question.

The CHAIRMAN: If you wish to have the accounts made out in a different way it is quite open to you to make the proposition, but we cannot satisfy you in this manner to-day.

Mr. BOX: You say you have £7891 available for dividend, but I say you have only £7581, for there is £310 to write off for interest upon bonds.

The SECRETARY: That has been deducted. The item is—"To amount for interest upon British debentures £310," and the balance is £7891.

The CHAIRMAN: Gentlemen, the next question was—"What is the excess of expenditure over revenue?" That appears to me to be the most extraordinary question ever put, when we show you a balance the other way, available for dividend of between £7000 and £8000; and I say it would be a disgrace to any board of directors to come here and address an intelligent body of shareholders, proposing to them to declare a dividend of 6 per cent., if the expenditure was, as is suggested, in excess of income. (Hear, hear.) I trust, gentlemen, that, so long as I am connected with this company, we shall never labour under the stigma of paying dividends out of capital. (Hear, hear,) It has never been charged upon us before, and I trust never will be again. (Cheers.) Then he asks, "What has been the excess of expenditure over income during the last three years and a half?" Gentlemen, you have had the accounts before you, from time to time, during that period; and, if there had been such an excess, can it be supposed that you would have declared a dividend? Mr. Box has been here himself on these occasions; he has watched our proceedings narrowly, and why has he not objected before? (Hear, hear.) I should be truly ashamed of myself if, as your deputy chairman, I had ever proposed that you should divide one per cent., if I was not sure that you were in a position to do so. I believe I have answered every question that I could be expected to do, to the best of my ability. (Cheers.)

Mr. BOX rose again to speak, amidst loud expressions of disapprobation.

A PROPRIETOR appealed to the chair not to allow the time of the meeting to be wasted in hearing Mr. Box talk.

Mr. LEWIS said, as business and professional men, the time of the shareholders was too valuable to be frittered away in this manner. (Hear, hear.)

The CHAIRMAN said Mr. Box had had a full opportunity for putting whatever questions he thought proper; he had received answers to most of those questions, and now the matter must close. (Hear, hear.)

Mr. R. A GRAY said there was a very simple method of dealing with the matter. Mr. Box had received what must be satisfactory replies to his inquiries; let the chairman now take the opinion of the meeting as to the propriety of allowing him to proceed.

Mr. BOX, however, persisted in speaking, quoting at some length the figures of a document which he held in his hand, and which purported to be an analysis of the last half year's accounts of the company. The chairman and secretary repeatedly pointed out to him, as he proceeded, the errors which he had committed, and which were patent to every one else but himself. It seemed, however, to be useless to interfere, for the honourable proprietor had made up his mind to enlighten the meeting upon points on which he had evidently mystified himself; but when he stated that, having done with the revenue department, he would now come to the manufacturing, the unanimous voice of the meeting sternly protested against him, and he was obliged to resume his seat.

Mr. LULHAM said if Mr. Box's estimate of the position of the company were correct, it was clear that he must regard the concern as a very bad one, and he would be only too glad to part with his shares. If so, he (Mr. Lulham) would be equally glad to take them from him at par. ("Hear," and a laugh.) He had been a shareholder for a much longer period than Mr. Box, and he felt that it was an insult for any gentleman to get up in that meeting and state what was positively untrue.

The CHAIRMAN: We may, perhaps, reconcile the apparent discrepancy in the matters Mr. Box has referred to. The honourable proprietor has evidently a different mode of arriving at the results he has stated to what the directors have. All that he (the chairman) could say was, that the accounts of the company had been subjected to a rigid scrutiny by the auditors. The directors, too, had gone carefully over them, and they were convinced that there was a sufficient profit to enable them to pay 6 per cent. to the proprietors, and carry a considerable sum to the reserve-fund.

Mr. NICHOLSON said that in a company of which Mr. Box was an auditor, his own colleague asked the proprietors at one of their meetings to "appoint an auditor who understood accounts," clearly showing that he understood nothing at all about them; and Mr. Box, who was present, did not contradict him. ("Hear," and a laugh.)

The CHAIRMAN: I shall now put the question.

Mr. BOX: No; I have some remarks to make about the manufacturing department. (Oh!)

Mr. BRATT: My time here is, of course, of little consequence; but I believe there are gentlemen present to whom this delay is a great inconvenience. (Hear, hear.) I submit to the meeting whether these questions of the honourable proprietor are to profit? If so, follow them till midnight; if not, let there be an end to them. (Hear, hear.)

Mr. GRAY: I hope, after the suggestion of Mr. Bratt, our time will not be further wasted. We all are desirous to ascertain the true position of the company; it is a right which we are bound to exercise, and which I am sure the directors will not at any time deny. But Mr. Box has endeavoured to mystify the concern from beginning to end. (Hear, hear.) It must be in the recollection of every gentleman present that Mr. Box has taken great pains to impress upon the shareholders that the company could only pay 1½ per cent.; but, upon further inquiries, it turns out that, after writing off a liberal sum for wear and tear, there is a divisible profit of £7500, which clearly establishes and provides for the dividend which the directors are about to declare. (Hear, hear.) While on my legs, I would suggest a course to Mr. Box for the future which would save much time at our half-yearly meetings. Let him, two or three days before hand, furnish the secretary with a list of the questions which he intends to propose, after a careful examination of the company's accounts. (Hear, hear.) The effect would be, that the chairman would come here prepared to give him a direct answer, and thus time would be saved, and no unseemly reflections cast upon the directors. (Cheers.) In reference to the statements this day submitted to us, I think they are in every respect most satisfactory. Allusion has been made to the money borrowed; and it must be obvious to us all that if the directors can borrow money at a less rate of interest than they would have to pay if they called up further capital, it is better for the proprietors generally. The same remark also applies to the balance of undivided profits; it is much better that the surplus should be invested in the working of the concern than that fresh calls should be made, which must deteriorate the value of the shares. There is only one point on which I dissent from the directors, and I certainly think it is a point deserving their attention. It appears to me they are writing off too much every half year for depreciation. If they were to write off 2 per cent.—viz., 1½ per cent. one half year, and ½ per cent. the next, I think it would be quite as much as they should do. Why do I say so? Because the plant is not deteriorating in value at all. If your property had been leasehold it would have been altogether another question. I could conceive the necessity of making provision for re-establishing your works elsewhere; but yours is freehold, and the works are kept in good repair every half year.

Mr. BOX: Now, sir, I have an amendment to propose. It is this, "That the finances of the company not appearing satisfactory to this meeting, it is deemed expedient to appoint a committee of investigation—(loud laughter)—to examine into them, and also into the affairs of the company generally; and that the said committee be empowered to examine all books, papers, vouchers, persons, &c., that they may think necessary, and report thereon to a special meeting, to be convened by the directors for that purpose." (Loud expression of disapprobation.)

The CHAIRMAN: Does any one second the amendment? (No, no.) Then it falls to the ground.

The motion was then put to the meeting, and carried with one dissentient.

The SECRETARY then read the following:—

SCHEME FOR DIVIDEND, DECEMBER 31, 1856.

For wear and tear—									
Buildings	£22,848	2	0	@ 1	per cent.	£228	9	7
Plant	69,175	13	7	@ 2	per cent.	1,383	10	3
Mains	46,196	16	11	@ 1½	per cent.	577	9	2
Services	9,313	1	0	@ 5	per cent.	465	13	0
Meters	14,045	4	5	@ 5	per cent.	702	5	2
Plant—Poplar	8,068	14	9	@ 3	per cent.	242	0	11
Do.—British	90,679	11	4	@ 1	per cent.	906	15	10
						£4,506	3	11
Interest on British debentures						310	0	0
Do. on loans						635	16	7
For dividend						6,923	19	5
Balance unappropriated						21	15	2
						£12,397	15	1

Balance	£12,397 15 1
	£12,397 15 1

Mr. GRAHAM: Could not the directors make our dividend 7 per cent.? ("Hear," and a laugh.) There are two reasons why I think they might. They are writing off £4400 for wear and tear. If they were to write off less, say £2500, and give us 7 per cent., it would do away with any impression that the company was not progressing, as I believe it is, most satisfactorily. I shall propose a motion to that effect.

The CHAIRMAN: It would afford the directors great pleasure if they could conscientiously recommend you to divide 7 per cent. It certainly may be a question whether some of the items of wear and tear are too high, but I can only assure you that the list has been submitted to our engineer, and these per centages which we have affixed against them are so affixed upon his recommendation, and not upon the mere opinion of the board. What with the high prices of the articles we consume, with the difficulties that are thrown in the way of gas companies, and with gas at the price we are supplying it in a large and widely-extended district, it would be very injudicious to ask the directors to divide a larger amount of profit. It is, I assure you, after due deliberation, that we have arrived at the result to recommend a division of 6 per cent.

Mr. GRAHAM: I am only afraid we have had 6 per cent. for so many years, that the directors begin to think they must not go beyond it.

The CHAIRMAN: No; I trust there is nothing like finality about our proceedings, but that our principles and practice will be that of progress. Nothing can be pleasanter than for your directors to come forward with smiling faces to propose that you should receive a large dividend; but we must all feel that a fairly and honestly earned small dividend is better than a large one about the source or propriety of which there is any doubt. (Hear, hear.) We can honestly pay 6 per cent.; we cannot properly pay 7 per cent. You are aware that we do not now charge for meters, and the wear and tear on that item alone is very great; and I have some doubts, though I do not like to put my opinion in opposition to the engineer's, that even 5 per cent. is not enough to allow for depreciation on this head.

Mr. GRAHAM: I will withdraw my motion, in the hope that the directors will look into the matter before the next meeting. If they come forward again to propose 6 per cent., I shall again introduce my motion.

Mr. BURNELL: I merely wish to offer two or three brief observations on what fell from Mr. Bratt. That gentleman reminded us of the value of our time, and expressed his opinion that we were all anxious to get away from this place; but I must beg to remind him and the proprietors generally of the value of our property which is at stake, and of the large capital we have invested—more than a quarter of a million in this concern. I cannot help thinking that until the profits of the half year are shown from the half year's accounts, instead of being made up from the capital account as at present, there will always be a certain degree of mystification about the matter. Now, we have no showing of the cost of labour, coals, and wages, in each half year; nor, on the other hand, the amount charged for gas to different consumers, with the balance struck so as to show the profits. I feel that there is a want of classification in the accounts. We come here, year after year, and find a different heading to the large items every time; and I think there are certain of these large items which, if kept clearly distinct, would give us an opportunity of comparison, and assist us in ascertaining the true position of the company. What I say is, that we never know how much profit we make in a half year. Who knows how much additional we have made since we joined the British? And why? Because the profit is always struck from the capital, which is a very indefinite amount. I would suggest, therefore, that in future there should be brought before the proprietors a distinct statement of the working—showing receipts, expenditure, and profits. Let us see what has been bought on the one side and received on the other—we shall then know whether we are making £7000 or £27,000 a year.

The CHAIRMAN: I will merely say, in answer to Mr. Burnell, that it will always be our pleasure to fall in with the views of the proprietors as to the mode of presenting our accounts; but I must also state that the present is the form which was suggested at a meeting of the proprietors. At one time we used to go more into detail, and then honourable proprietors used to get up and say that the accounts were a perfect labyrinth; that it was impossible to follow them; and requested we would give them shortly the results. Mr. Burnell knows as well as we do that there are no secrets with the directors; and that down at the works, where our books are, they may have every figure verified, and analyse the accounts in any way they please; but, in accordance with the views of the proprietors, we have not deemed it expedient to bring a vast quantity of figures to a public meeting such as this is. However, the suggestion of the honourable proprietor shall have the fullest consideration of the directors. I have now to propose to you to approve of the scheme, and to declare a dividend at the rate of 6 per cent., clear of income-tax, for the half year ending Dec. 31 last, payable on and after the 20th inst.

Mr. BOX: You have not got it to give.

The CHAIRMAN: The honourable proprietor can relieve his conscience by taking only the 1½ per cent. that he has spoken of. (A laugh.)

Mr. GRAHAM: I should advise him to go next Monday and take his 6 per cent at once. (Renewed laughter.)

The question was then put and carried unanimously.

The CHAIRMAN then proposed the re-election of the retiring directors.

Mr. BURGESS: I think it would be very advantageous to have some new directors. There are many gentlemen present who are, no doubt, properly qualified.

The CHAIRMAN: There must be a proper notice given before fresh directors can be nominated. In reference to those whom I have proposed for re-election, they have been in office nearly as long as I have been, and they have served you most faithfully, and this is the first time in my life that I have heard of a public company being asked to reject faithful servants without a cause. No doubt there are gentlemen present who are qualified to serve, and who we shall be happy to see at the board whenever a vacancy occurs; but, while your old directors enjoy good health, and are willing to serve you, it does not appear fair and English-like to turn them away.

Mr. GRAHAM: I believe it is required by your act of Parliament that 21 days' notice should be given before any fresh nomination is made.

The CHAIRMAN: It is required by our by-laws, which are framed on the authority of our act, and no such notice has been given.

Mr. LULHAM: I have known these gentlemen personally for many years, and I am aware that when the company was first started, and had many difficulties to encounter, these gentlemen not only perseveringly attended to our affairs, and laboured without remuneration, but they became responsible for large sums of money to work the company, and bring it to what it is. (Hear.)

Mr. BOX: I do not think that £1500 a year is too large a sum to give to the directors. If you want gentlemen to give up their time and devote their talents to your affairs, you must pay them for it. But, with respect to an observation made by one proprietor, that notice must be given beforehand of an intention to propose fresh directors, I say you cannot make a by-law which contradicts your act of Parliament.

The CHAIRMAN: The by-law is made in conformity with the act, and was adopted at a public meeting before you became a proprietor. In reference to the remuneration, we are perfectly satisfied.

The retiring directors were then severally re-elected.

Mr. RHODES: Are you going to make a call?

The CHAIRMAN: I do not expect we shall.

Mr. BURNELL: How many by-laws are there? I think it very desirable that they should be printed, and circulated among the proprietors.

The CHAIRMAN: There are seven, and they have the corporate seal attached, by authority at a meeting of proprietors.

Mr. BRUSHFIELD, in returning thanks for his re-election, said he looked back to the time when this company was at its lowest, which was the time when he became a director, and he contrasted it with its present condition, when, as he believed, in point of management, it was second to no company in the metropolis. So long as he had health and strength, he should gladly devote them to the service of the shareholders, as he had done in past years.

Mr. JONES and Mr. SOLOMONS also acknowledged the renewed expression of the confidence of the proprietors in re-electing them.

Mr. WEBB, the retiring auditor, having been re-elected, said, in acknowledging the vote: Myself and colleagues have anxiously and carefully gone through the accounts, and I really am surprised to hear such curious things put forward. The accounts are quite correct, and I am happy to say you are in a flourishing condition. With regard to the mode of stating the accounts, it is not for us as your auditors to say how that should be done; all we have to do is to see that they are correct. We have certified that they are, and that there is that amount of *bonâ fide* profit made by you that will enable you to pay 6 per cent.

The SECRETARY read the report of the engineer addressed to the chairman and board of directors, as follows:—

Gentlemen,—I beg to report that the works are in a satisfactory state, and in good working condition.

(Signed) ROBERT JONES, Engineer.

Mr. BURNELL moved, "That the report of the directors, as passed to-day, with the accounts and engineer's report, be printed, and circulated among the proprietors."

The CHAIRMAN said: You are aware that for some time past we have had the benefit of the presence of the representatives of the public press, and that all that has transpired to-day, with the documents that have been read, will appear in certain journals.

Mr. GRAY suggested that a copy of the journals containing the report of the proceedings should be sent to each proprietor.

The motion of Mr. Burnell having been seconded, was carried.

Mr. GRAY: Gentlemen, from the manner in which the directors have conducted themselves upon this occasion, and in past times, I think they are fully deserving of our confidence. (Hear, hear.) I think that no body of gentlemen could more efficiently perform the duties which we have committed to them than they have done. As to the scale of remuneration they receive, I can only say that they do not get more than they are fairly entitled to; and I am sure, if our circumstances were less prosperous, they would be happy to take less. I beg to propose that the cordial thanks of this meeting be given to the directors, for the able manner in which they have conducted the business of this company.

Mr. GRAHAM seconded the motion, which was unanimously adopted.

The CHAIRMAN: Gentlemen, it is my pleasing duty, on behalf of myself and colleagues, to return our best thanks for the cordial and unanimous manner in which you have passed the last resolution. I am afraid you have thought me rather wordy to-day; but as your chairman, I have had a task of no little difficulty, from the fact that I have been called upon to answer questions which it would have been impossible, without previous notice, to answer. (Hear, hear.) I have endeavoured to meet the difficulty to the best of my ability, and I am glad if I have satisfied you as to the mode in which our business is conducted. We are much obliged to you for this renewed mark of your esteem and approbation, and trust we shall meet you, with our chairman in better health, in the autumn of this year to congratulate you upon our increased prosperity. (Cheers.)

On the motion of Mr. GRAHAM, a vote of thanks to the auditors was cordially adopted, and the proceedings terminated.

LONDON GAS COMPANY.

The Ordinary Half-Yearly Meeting of the Proprietors of this Company was held at Freemason's Tavern, Great Queen Street, Lincoln's Inn Fields, on Tuesday, April 14—E. HAWKINS, jun., Esq. (the Governor), in the chair.

The SECRETARY (Mr. Hinde) read the notice convening the meeting, and the corporate seal was then affixed to the register of proprietors.

The CHAIRMAN read the following report of the directors:—

Your directors submit to you the balance-sheet and half-yearly account, showing the result of the manufacture and distribution of the company's gas up to the 31st day of December last. A statement of the profit and loss for the past half year is annexed to this report.

The directors propose to set aside out of the profits £2500 to meet contingencies, and for enlarging and improving the works in the purifying department. It will be seen by the statement of the dividend fund, that a sum of £9272. 4s. 5d. remains applicable to dividend. Of that sum, £4109. 5s. will be appropriated to the dividend upon the first preference shares of 1849, payable on the 15th inst., leaving a balance of £5162. 19s. 5d. to the credit of the dividend fund, out of which the directors recommend that £1. 10s. per share (being at the rate of 6 per cent. per annum) be paid, on and after the 15th day of June next, on account of suspended dividends on the preference shares of 1840, commonly known as blue preference shares.

The word "suspended" is retained, preceding the word dividend, as it has appeared in previous reports; but it is so retained, as the directors have repeatedly stated verbally, without any intention to prejudice rights, with relation to which the extraordinary general meeting to be held to-day has been summoned.

The progressive improvement in the condition of the company continues to be most satisfactory. The profits of the half year, after writing off £7673. 11s. 4d. for depreciation, which sum includes £5000 for depreciation of the lease of a portion of the works at Vauxhall, have amounted to £12,618. 2s. 7d., being an increase of upwards of £2100 upon the profits of the corresponding previous half year. This result has been accomplished, although the sum obtained by the sale of coke, tar, and other products arising from the distillation of coal, has been about £2500 less than would have been realised had the market prices of those articles remained undiminished. It is also worthy of remark that the gas rental, as compared with that of the corresponding previous half year, has increased by upwards of £2600, while at the same time the coal expended to produce that rental has been diminished by 485 tons.

It has been stated above that the directors propose to set aside £2500 to meet contingencies, and improvements in purification. The principal of these contingencies will be the meeting of a portion of the expenses incident to the actions between the Imperial and London Companies, and to the indictment by the Corporation of London against the directors and engineer, and one of the company's servants; all which have been settled since the expiration of the period over which the accounts before this meeting extend, and therefore do not form an item in these accounts. The expenses of these proceedings are not at present ascertained; but the directors are assured that they will exceed the amount of the fund, to form which, and to meet current law charges, £300 for several half years, and £500 in the past half year, have been set apart out of the profits.

The improvements in purification above referred to consist in certain arrangements of the large dry purifiers now in course of construction, which are intended to replace the wet purifiers hitherto in use. These arrangements are expected to have the effect of entirely preventing the evolving of any offensive smell whatever in any part of the process of purification.

Your directors think it due, both to their brother shareholders and to themselves, that fuller explanations than have appeared in the public journals should be given with respect to the indictment. In November, 1855, which was long previous to any communication upon the subject from the City authorities, those directors who are members of the committee of works, in consequence of information which they had received, directed the engineer immediately to put a stop to the practice of discharging into the river any portion of the lime and water used for purification, if such practice existed. The engineer immediately took the only steps then in his power towards its discontinuance; but, in consequence of the great pressure upon the works during mid-winter, he found it impossible to complete his arrangements for evaporating the whole of the water and conveying away in barges the more solid matter, till the 8th of March, 1856, when the practice in question was wholly discontinued. In the same month, as an additional precaution, the engineer, under his own inspection, caused to be removed a portion of the pipe which had formerly been used for conveying the refuse water into the river, and a blank flange to be fixed on that portion of it which remained attached to the works. On the 3rd of June a notice from the city solicitor was received to abate a nuisance, alleged to exist, by allowing the refuse from this company's works to flow into the river Thames. This alleged nuisance had, as above mentioned, then long been abated. On the 16th of October the water bailiff discovered refuse water running into the river through a pipe connected with the works. The engineer, on being questioned by the directors, and relying on his having himself seen all communication with the river cut off, denied the possibility of the authorities having made any such discovery; but, upon further investigation, discovered that one of the men employed at the purifiers had, without his knowledge and contrary to his orders, in order to get rid of a portion of the refuse when inconvenienced by it, removed the flange and replaced the portion of the pipe which had been taken away.

The large gasholder at Nine Elms is now finished, and it only remains to put both it and the brick tank in which it stands to the usual tests before making use of it for the ensuing winter.

Nine years since, when the condition of the company was far less promising than it is at present, the directors reported that "your secretary having placed the reconsideration of his salary in their hands, they had consented to retain from the amount fixed by a general council of the company as his proper remuneration, the sum of £100 per annum, thereby reducing his salary from £500 to £400 per annum." The directors, in acknowledging the deep obligation which the company and themselves are under to Mr. Hinde for the great intelligence and unremitting attention which he has shown in forwarding their interests, now recommend to the meeting to restore to its former amount a salary, the sacrifice of which the present improved condition of the company no longer justifies it in accepting.

Before concluding their report, your directors, in congratulating their brother shareholders upon the great advance which has been made by the company, desire to assure them that, from having at length obtained sufficient gasholder room, from the rapidly increasing gas rental, and from other causes, still greater returns may be confidently expected for the year commencing at Midsummer. But to obtain the benefit of those returns the question of legal rights of the holders of preference and ordinary shares must first be determined. As a means towards the settlement of this question, your directors have summoned the extraordinary general meeting, which is to take place immediately after the business of the present meeting shall have been concluded; and they invite and expect the cordial co-operation of every shareholder in their endeavours to bring about the amicable settlement of a question in which all are so deeply interested.

Three directors, viz., Edward Hawkins, jun., Esq., governor; Charles Bratt, Esq.; and William Christie, Esq., retire by rotation, and, being eligible, offer themselves for re-election. One auditor, viz., Miles Miley, jun., Esq., retires also by rotation, and, being eligible, offers himself for re-election.

The SECRETARY read the subjoined profit and loss account and balance-sheet:—

BALANCE-SHEET, DECEMBER 31, 1856.

Dr.						*Cr.*					
To 7730 shares			£386,500	0	0	By purchase of estates at Vauxhall and Nine Elms—machinery, building, and expense	£239,742	5	5		
5479 first preference shares			136,975	0	0	Cost of ovens	22,347	2	2		
					£523,475 0 0					£262,089 7 7	
Bonds					82,250 0 0	Mains				225,029 10 5	
Mortgages					17,000 0 0	Services				31,869 4 9	
Temporary loans					15,325 0 0	Meters in use				11,791 1 3	
Trade and other debts					39,645 18 9	Fittings at theatres, &c.				376 17 4	
Unpaid dividends			£1,206	0	5	Office fittings, furniture, &c.				801 18 2	
Interest on shares, 1845			2,986	15	2						£512,157 19 6
					4,192 15 7	Sundry utensils					548 10 0
Contingent-fund					4,000 0 0	Goods and products in store					10,788 10 11
Balance of profits, viz.:—						Amount to receive on shares				£10,657 13 5	
From previous half year			£7,474	5	4	Do. on first preference shares					10,657 13 5
Half year ending December 31, 1856			7,260	12	4	Do. owing for gas				£48,522 3 6	
			£14,734	17	8	Do., do., for coke				5,514 14 9	
Dividend, first preference shares, September 30, 1856		£4,023	8	3		Do., do., for house rents				1,631 18 0	
Dividend on blue shares		1,439	5	0		Do., do., for sundries				3,917 8 11	
			5,462	13	3					59,586 5 4	
					9,272 4 5	Cash in hand					2,486 6 2
						Balance, June 30, 1855					96,953 13 5
					£693,160 18 9						£693,160 18 9

PROFIT AND LOSS, Half Year ending December 31, 1856

Dr.				*Cr.*			
To coals	£27,741	12	7	By gas	£54,004	18	7
Lime	443	18	6	Coke and other products	15,608	11	7
Stores	1,290	11	0	Rents	462	17	2
Wear and tear	2,860	15	11				
Royalty	640	4	6				
Meters—repairing and fixing	1,295	10	11				
Directory and auditing	530	0	0				
Salaries	1,533	10	0				
Rates and taxes	1,067	0	9				
Rents	706	0	0				
Commission	600	4	5				
Stationery and incidental expenses	771	8	7				
Allowances and bad debts	1,038	17	11				
Law expenses	500	0	0				
Gas supplied by other companies	278	9	9				
Depreciation	7,673	11	4				
Income-tax	198	1	2				
Balance	12,618	2	7				
	£70,076	7	4		£70,076	7	4
Interest on borrowed money	£2,857	10	3	Balance brought down	£12,618	2	7
Set aside for contingencies	2,500	0	0				
Balance	7,260	12	4				
	£12,618	2	7		£12,618	2	7

DIVIDEND FUND.

Dr.				*Cr.*			
To amount of first preference shares' dividend, September 30, 1856	£4,023	8	3	By surplus profit, June 30, 1856	£7,474	5	4
Do. blue shares' dividend	1,439	5	0	Balance as above	7,260	12	4
Balance	9,272	4	5				
	£14,734	17	8		£14,734	17	8

The Chairman: Gentlemen, it now becomes my duty to move, "That the report of the directors, and the accounts now laid before the meeting, be received and adopted;" but, before doing so, I should like to make a few observations. You will have observed that the last paragraph but one of the report refers to a subject which upon the present occasion is, of all others, the most important for the consideration of the shareholders. I allude, of course, to the question of the rights of the different classes of the shareholders, arising from the fact that the dividends upon the preference shares have been suspended for many years. This being, as I say, the most important question of the day, the directors and myself are very anxious that needless time should not be expended upon the discussion of the report. It seems very desirable that no shareholder should leave the room before the real question of the day comes on for consideration; and it will require the patient and unwearied attention of all present to arrive at a satisfactory conclusion upon it. The directors feel that, in asking you not to draw out the discussion upon the report to any great length, they are not asking anything unreasonable, inasmuch as that document is, I am happy to say, the most favourable that the board have ever been able to lay before the proprietors. At the corresponding period of last year we all thought that we had done a great deal in being able to show that we had made a profit of £10,500; but on the present occasion the profit exceeds that sum by upwards of £2000—the profit upon the half year being £12,600; and that has been obtained after writing off a much larger sum for depreciation than any other gas company with a similar capital does write off; and, indeed, more than would be necessary, supposing that our works were situated upon our own freehold property. Now, a very few years will bring this depreciation fund to an end, as the lease of the Vauxhall estate will have terminated. We shall then know what we have to deal with; and the amount now written off for depreciation—or, at all events, a large portion of it, will fall into our regular profits. But, in the mean time, we have much to look forward to, in order to increase our annual returns. We have in past times spoken much as to the great importance and absolute necessity of obtaining more gasholder room. That object has, I am glad to tell you, now been secured; and, in the course of next winter, we shall be as well off in that respect as any other company in the metropolis. There are several other subjects now coming under the consideration of the directors for the improvement of your property; in fact, they have been more than considered, for upon some of them we have come to a decision which, we believe, will tend much to increase the profits of the company. Amongst others, we shall be able, and we hope in a short time, to discontinue the heavy charge from half year to half year for law expenses. Having said thus much, I will not detain you from the more important business which requires your attention by any remarks of my own, but will at once move the adoption of the report and accounts.

Mr. Rhodes: I second the motion; and in doing so would just say that I think you are making much less for your coke and other residual products than you ought to do. I would suggest that this may arise from the want of something like union amongst the various companies in order to regulate the price of those commodities. I do not see why you should give your profits in these matters away to the public. That is one matter: another is in reference to the public lighting—I mean the district and parish lamps. I think if there was something like unity of action between the various companies, you might get a better price than you do at present. For instance, you now light up one district at a certain price, and another at a very different one, for there seems to be no regular and fixed charge in the subject; and I have no doubt that, if the various companies would look at the question, something might be done to remedy this state of things, of which all of us feel the disadvantage.

The Chairman: I can only say that I believe there is now a very friendly feeling existing between ourselves and most of the other companies, and I have reason to hope that this friendly feeling may be extended—if so, it will conduce to bring about the result which the honourable proprietor desires. I am afraid, however, that, with regard to coke, we cannot put an end to the working of the principle of free trade. That is an article upon which, no question, there has been a great diminution in price within the last seven years; but it is one of those matters where things will find the level of their true value. There is more demand now for it than there has been, but the price has been within the time I name reduced at least 50 per cent.

Mr. R. A. Gray: If the suggestions made by Mr. Rhodes could be carried out, no doubt they would be very advantageous; but I have no hesitation in saying they are quite impracticable. In the first place, many gas companies have not sufficient room for the stowage of coke, and therefore their great object and their safest course is to sell it as fast as they can. I am happy to say that I believe, as the chairman has stated, there is a very friendly feeling amongst all the gas companies, and that we are all actuated by one common feeling, which is to make our respective properties as productive as possible. But in doing so we must be careful not to excite public feeling against ourselves. There must be no improper combinations amongst us. Let us do the best we can to protect our interests, and, with the friendly co-operation which now characterises our intercourse with each other, I do not fear but that we shall be very successful. Every one of the metropolitan gas companies have had to encounter great difficulties, and, perhaps, none more so than this company; but I have no doubt that, if the proprietors will only act harmoniously with the directors, the day is not far distant when the shares which are now described as "black" will receive a dividend. To effect that desirable object, however, I should be sorry to see injustice done to any other class of shareholders. My worthy friend, the chairman, has stated, and I think with great propriety, that he has reason to hope the next half year will be a more productive one than the past, as we have now the advantage of enlarged gasholder room. This has long been one of our most pressing wants, and it must be obvious that if a company has not sufficient stowage for gas they must manufacture at a very heavy expense. I am happy to say that now you will be relieved of a great part of the loss arising hitherto from this cause; and I believe that, on the occasion of our next meeting, our friend the chairman will be able to give us a better account even than he has done to-day, favourable as that is.

A Proprietor: What do the arrears of dividend amount to?

The Chairman: I think we had better reserve all questions on that point until the extraordinary meeting. I am anxious that we should get through the business of this meeting as speedily as possible, so as to proceed without delay to the consideration of that which principally interests us to day. I was very glad to hear the remarks of our friend Mr. Gray, for what he says is entitled to be received as authority, coming from one who is chairman of one of the largest gas companies in London.

Mr. Sykes: I should just like to know what is the £2500 carried over to the contingent fund for, and whether it is to be repeated every half year?

The Chairman: The profits of the company are amply sufficient to pay a dividend at the rate of 6 per cent. upon the blue shares, and yet leave a considerable surplus over. It is quite impossible that the directors should divide that surplus at present, and the real fact is, that the contingencies of the company require that this surplus should be employed. There are several matters referred to in the report, the carrying out of which—such as the alteration in the mode of purification—will involve considerable expenditure. There are also the law expenses.

Mr. Sykes: Is it likely to be repeated?

The Chairman: I suppose it is perfectly possible that from time to time some sum or other will be added to the contingent fund, but not, perhaps, this amount. I know of no contingency likely to occur which is not provided for by the depreciation fund. We have been adding a large sum every year to the contingent fund, and it is to be expected that the arrangements necessary, in reference to the property of the company at Vauxhall, will require a very considerable portion of that fund.

Mr. Rhodes: I hope you will be able to inform us, sir, that there has been a great reduction in the leakage.

The Chairman: I am very glad to have had that question asked, because I have gone into the calculation, and this gives me the opportunity of stating the results. On former occasions our friend, Mr. Gray, has told us what return he considered we ought to have as the criterion of good working—that return—viz., that, for every ton of coals carbonized, we should deliver to the consumer 7500 feet of gas—I believe we have very nearly reached. My impression is, that we have reached 7250 feet per ton, and our leakage has been reduced to 26 per cent.

Mr. Rhodes: Shall I be in order in referring to another point? I hope the attention of the board of directors has been given to the share list of this company. Such unsettledness has taken place lately—not, however, in reference to gas companies—that I think it very important to see that all the shares are properly registered when a transfer takes place from one proprietor to another.

The Chairman: It certainly is a very important matter to which Mr. Rhodes alludes. In other companies, as he has stated, there have been great frauds discovered, during the past year, in reference to the sale and transfer of shares. I may state, therefore, for your satisfaction, that two of the directors—Mr. Sprague and another—have, previously to this meeting, verified every one of the shares of our company, and seen that the bankers have received the money for every share issued, and that that money has been properly carried to account.

Mr. Deeley: You said there had been a great decrease this half year in the leakage; I hope that this decrease will be continued.

The Chairman: I hope so too. To show the great improvement which has been made in our manufacture, I may mention that two years ago—viz., in the year 1854, we used nearly 1500 tons of coal more than in the year which has just expired; and yet the rental of the past year was upwards of £14,000 more than it was in the first-named period; so that, with gas at the same price, we have an additional rental of £14,150, and a diminution of nearly 1500 tons of coal in the consumption.

Mr. Pidgeon: I see that there is a sum of £7673 set apart for a depreciation fund, also the sum of £2500 for contingencies, making together a sum for depreciation of £10,173, which, added to the balance of £2040, makes a total of £12,173; while the proprietors are only to receive £4100. Now, with such an amount in hand, I think we ought to pay one year's interest upon the red shares. I shall, therefore, move, as an amendment, that the sum of 30s.

per share be paid upon the red, as well as upon the blue, usually called "suspended." I do think we can afford to divide £1300, which will produce 30s. per share, as I have suggested.

The CHAIRMAN: Let me answer that point at once. The question of the rights of the various classes of shareholders will come on immediately after this meeting.

Mr. PIDGEON: I am quite aware of that.

The CHAIRMAN: Those rights are disputed; and even, therefore, supposing you are correct, and a larger sum than the directors have named is put aside for dividends, neither you nor I can say who is to receive it. That is a question for the extraordinary meeting. I have just explained to you the reason why so large a sum has been put aside for depreciation and contingencies. The depreciation fund is the fund created by the amounts which we have written off for some years to meet the expense of re-establishing our works elsewhere, or to replace those which we shall lose by the falling in of the lease, or, if not, to compound with the Duchy of Cornwall to continue where we are at present. At any rate, a large sum will be required, and this fund is being created for that purpose. With regard to the £2500, I have just explained what that is for.

Mr. PIDGEON: I am quite aware that the question has frequently been discussed as to whether the arrears of dividend upon the preference shares are to be paid. If profits are made it is quite clear that the holders of the blue and red shares ought to have them, but if you are going to capitalise those profits they will be forfeited, and you have no right to do that.

The CHAIRMAN: The fact is this, that if the contingencies of the company require it, it will be right, commercially speaking, and the directors have full power under the act of Parliament, to set aside a sufficient sum of money to meet them. It is perfectly competent for this meeting to say that the amount is improper, and they may censure the directors for writing off so much; but, as I say, they have the power, which, however, they would be unwilling to exercise, of writing off any sum they may think proper. They never have done so, and——

A PROPRIETOR: If they did it would be disputed.

Mr. PIDGEON: I shall move my amendment that 30s. per share be paid to the red preference shareholders.

The CHAIRMAN: I am quite sure that no such motion will be carried. If it were, the effect would be a Chancery suit immediately, for the other shareholders, whose rights you would interfere with, would never allow it.

Mr. SPRAGUE (deputy governor): The amendment is not seconded, and if it were, it is one which, I submit, could not be put from the chair. It is perfectly well known to everybody that the blue preference shares stand before the red; and until all questions connected with the blue shares are settled, the red cannot be taken into consideration in any way whatever.

After some further conversation, the amendment having fallen to the ground for want of a seconder, the report and accounts were received and adopted.

The retiring directors, Mr. Hawkins, Mr. Bratt, and Mr. Christie, and the retiring auditor, Mr. Miley, were severally re-elected, and briefly acknowledged their obligations to the proprietors for these marks of their confidence.

Some discussion ensued on a motion by Mr. PIDGEON for an alteration in the mode of stating the half yearly accounts, which he contended ought to specify in detail the various sums expended on new works, &c.

The motion was not seconded. In reference to the matter,

The CHAIRMAN said: I wish you would leave it, to a certain extent, in the discretion of the directors to specify in detail what they deem prudent. One reason why public companies make less profits than they otherwise would, is the publicity given to some matters which ought not to be published. Nine-tenths of what we do we should be glad to have known at the time, but some things there are which we should be glad to withhold for perhaps a year. I should not like to be compelled to put all these matters that Mr. Pidgeon has referred to publicly in the accounts, except when I thought right to do so. But at the same, the books of the company containing these details are always open, and every shareholder has a right to inspect them.

This closed the business of the ordinary meeting.

EXTRAORDINARY MEETING.

The meeting was then made special for the purpose of considering the matters referred to in the subjoined circular, which had been previously circulated among the shareholders:—

The advertisements in the public journals will have informed you that, after the general meeting, an extraordinary general meeting will be held, for the purpose of determining the course to be adopted for ascertaining the rights of the holders of preference shares of 1840 and 1842, commonly called "the blue and red preference shares" respectively, as regards arrears of dividend.

The question here referred to is of such importance, that it is the earnest wish of the directors that every shareholder should attend the meeting with a clear understanding of its leading points.

In the year 1840, at a general meeting of the company, resolutions were passed, creating the shares commonly known as the "blue preference shares," and declaring that these shares should bear a fixed dividend of £3 per share per annum, payable half-yearly out of profits, before any other division thereof should be made.

In the year 1842, at a board of directors, acting in pursuance of powers vested in them by the general meeting of the company held the previous day, resolutions were passed creating the shares commonly known as the "red preference shares," and declaring that these shares should bear a fixed dividend of £3 per share per annum, payable half-yearly out of profits, next after the dividends upon the blue preference shares, and before any other division thereof should be made.

Upon both blue and red preference shares dividends at the rate of 6 per cent. per annum were regularly paid out of the profits of each half year, as shown in the half-yearly accounts, up to and including the half year ending June, 1847, when the affairs of the company were found to be greatly disorganised.

From that time no dividends were paid upon either blue or red preference shares until the year 1853, when a dividend at the rate of 3 per cent. per annum was paid upon the blue preference shares out of the profits of the half year ending June. A similar dividend has been paid half-yearly upon the blue preference shares up to the present time.

No dividend has yet been paid upon the red preference shares.

The financial position of the company is now greatly improved, and it is probable that sufficient profits will be speedily realised to enable a dividend at the rate of 6 per cent. per annum to be paid half-yearly upon the blue preference shares, and to leave a considerable surplus over. The question therefore arises, How is this surplus to be disposed of?

On behalf of the holders of the blue and red preference shares it is contended that this surplus must be disposed of, from time to time, in payment to the holders of the blue preference shares of all *unpaid arrears* of dividend, reckoned at the rate of 6 per cent. per annum, from the time of their discontinuance in 1847; that, after all such arrears have been paid off, the said surplus must be appropriated half-yearly to the payment of dividends, at the rate of 6 per cent. per annum, upon the red preference shares; that, subject to such payment of dividends, the surplus must be appropriated, from time to time, to the payment of all *unpaid arrears* of dividend upon the red preference shares, reckoned at the rate of 6 per cent. per annum from the time of their discontinuance in 1847.

On the other hand, on behalf of the holders of the ordinary shares, it is contended that, though in each half year in which profits are realised the holders of the blue and red preference shares are, according to their respective priorities, entitled to dividends at the rate of 6 per cent. per annum out of such profits, in preference to the holders of the ordinary shares, yet they are not entitled, in case in any half year the profits should be insufficient to pay to them dividends at the rate of 6 per cent. per annum, to have the deficiency made up to them out of the surplus profits of subsequent half years; that, therefore, the holders of the blue and red preference shares are not entitled to claim any arrears of dividend; and that the surplus profit of each half year, after payment of dividends at the rate of 6 per cent. per annum on the blue preference shares, must therefore henceforth be appropriated in payment of dividend at the rate of 6 per cent. per annum, on the red preference shares; and, subject thereto, must be divided among the ordinary shareholders.

Under these circumstances, the directors have thought it right to obtain the advice of counsel upon the best measures to be adopted for determining the respective rights of the holders of blue, red, and ordinary shares. They are advised to the effect,

That, with a view to avoiding future litigation, the questions at issue should be brought before the court in a suit. That the suit should be instituted by some of the holders of blue preference shares against the company, and some of the holders of the red preference shares, who should answer separately from the company; and that the company in their answer should put forward the case of the holders of the ordinary shares.

That the bill should be prepared under the direction of a committee of the shareholders principally interested in the blue preference shares; and that it would be preferable that this committee should be appointed, not by a meeting of the company, but by a meeting of shareholders, at which the secretary might request the attendance of all those shareholders, and only of those, who are interested in the blue preference shares, either exclusively, or more largely than in any other class of shares; that this committee should employ any solicitor whom it may select, and should receive from the directors any information it may require.

That a committee to act in the suit on behalf of the shareholders principally interested in the red preference shares should be appointed in a similar manner at a meeting of such shareholders.

That, in order to afford the information which the directors should be ready to give to the holders of the blue and red preference shares, it will probably be convenient that the chairman and secretary of the company should be present at the proposed meetings of these shareholders.

The directors are further advised—That, although an extraordinary meeting of the company does not appear indispensable, it might probably be of use in setting the matter in motion. The resolutions to be proposed might be to the following effect:—

1. That this meeting is of opinion that it would be advisable that an amicable suit should be instituted in the Court of Chancery, on behalf of the holders of the preference shares created in 1840, commonly known as the blue preference shares, against the company and the holders of the preference shares created in 1842, commonly known as the red preference shares, for the purpose of determining the respective rights of those classes of shareholders, and of the ordinary shareholders, as to the receipt of dividends and arrears of dividends, and otherwise.

2. That this meeting recommends to the shareholders exclusively or principally interested in the preference shares of 1840 and 1842 respectively, to hold separate meetings, in order to appoint committees for conducting, on their respective behalf, the contemplated proceedings.

Having thus laid before the shareholders the leading points of the question with which they have to deal, it only remains for the directors to request that every shareholder who can without great inconvenience attend the meeting will not fail to do so.

The CHAIRMAN: Gentlemen, In reference to the business to be discussed at this extraordinary meeting, I think the circular which has been sent to you by the directors really contains the pith of the matter. I may inform you, that since then we have had many communications from shareholders, and I and my brother directors have personally conferred with others on the subject. The result is, that we find there is a wish that some portion of the plan laid down in this circular should be slightly modified. I have seen the counsel whom we consulted previously to sending out this circular, and he has consented to the modification proposed, and which I will presently explain to you. I ought to state to you, that before resolving upon the course put forth in the circular, one or two other courses had suggested themselves to the directors, as we find they had also to other shareholders. The first course we proposed was this:—that we should get together as large a meeting of the proprietors as we could, and try if it were possible to persuade those present (and afterwards, by private application, to induce the others) to be bound by the opinion of some one or two eminent counsel as to what the respective rights of all classes of the shareholders are. But, upon further consideration, we found that there were many of the shareholders who are acting as trustees for married women and others; so that such a course was rendered impracticable. We knew also that, in addition to this difficulty, there are sure to be in every large body of shareholders some persons who would be unwilling to adopt any course, and who prefer to remain neuter; so that, though upon the whole that course was the most advisable, we were obliged to abandon it as impossible. The second course which suggested itself to us was this:—There is an act of Parliament which was passed some years ago, called "Sir George Turner's Act," which gives power to the Court of Chancery—the parties being all before it, and though possessing different interests, all agreeing upon the state of facts—to decide upon a case submitted to it; and it was thought that this act might be made applicable to the circumstances in which we are placed. We consulted counsel upon the point, and he objected to it on this ground:—he said, "The court will give an opinion upon a case so presented, but such an opinion will not bind any other shareholders than those who have agreed upon the case laid before it; therefore, supposing a few of the blue shareholders were to apply to the court in conjunction with some who represent other classes, the only persons actually bound by the decision thus obtained would be those who made the application, and not the other shareholders in the classes to which they respectively belong." Our counsel, therefore, advised us to abandon that course, which we thought would have been a more amicable and less expensive one, and to adopt the only one possible, viz., that of a friendly suit in Chancery. At the same time, it was stated to us that the costs of such a proceeding, if all the shareholders would make up their minds that it should be an amicable one, and would all join to assist the directors in carrying it out, would not exceed the costs of an application under Sir George Turner's Act. Great care must be taken that the solicitors to be employed are such as will act under your direction, and in the spirit which I hope animates us all, that, if possible, we may obtain an equitable decision on the question at issue. Our counsel informs us, that when a suit is before the court in this manner, even though a few shareholders of each class are the parties actually acting in the suit, yet, if the court sees that they are acting *bonâ fide* on behalf of all the parties they profess to represent, it is the practice to give a decision which will be binding on every one of them. Of course, each would have a right of appeal to a superior court; but no shareholder can go again to the court which has given its decision. We hope that it will not be necessary to appeal; and it will not be, if the shareholders enter into the question in the same spirit in which they are met here to-day. I will now state to you the modifications which have been proposed since this circular was issued. The directors have always stated to this meeting that it was their opinion the preference shareholders were entitled to receive the arrears of dividends on their shares. They hold that opinion very strongly and are anxious that a decree of the court to that effect should be obtained; but it is quite impossible for them to act upon their wishes: it is a purely legal question, and the matter must come before the court for ultimate decision. Still the directors would not like that they should appear to act adversely to their previously expressed opinions, which they would have to do if the clause in the circular were carried out, "That the suit should be

instituted by some of the holders of blue preference shares against the company, and some of the holders of the red preference shares, who should answer separately from the company; and that the company in their answer should put forward the case of the holders of the ordinary shares." The directors do not like to be placed in that position; it seems to them to involve something like a breach of faith towards the preference shareholders, that they should be made, for the sake of convenience, to put forward the claims of any other class of shareholders. Therefore, when I saw counsel, and explained to him what were our feelings, he said he had simply recommended that course to avoid complexity and some portion of expense, as by adopting it there would only be three parties before the court—the blue shareholders, the red shareholders, and the directors, as representing the black. By the other course now suggested, there will be the three classes of shareholders and the directors, acting as trustees, and offering to carry out what the court may decree with respect to the rights of each. The directors therefore propose, as the first resolution, "That this meeting is of opinion that it would be advisable that an amicable suit should be instituted in the Court of Chancery on behalf of the holders of the preference shares created in 1840, commonly known as the blue preference shares, against the company and the holders of the preference shares created in 1842, commonly known as the red preference shares, and the holders of the ordinary shares, for the purpose of determining the respective rights of those classes of shareholders as to the receipt of dividends, and otherwise." The second resolution will be "That this meeting recommends to the shareholders exclusively or principally interested in the preference shares of 1840 and 1842, and of the ordinary shares respectively, to hold separate meetings, in order to appoint committees for conducting on their respective behalf the contemplated proceedings." The third resolution will have reference to the expenses. Some of the shareholders with whom I have consulted expressed their fears with regard to what the costs of these proceedings would be. They seemed to feel that supposing two or three shareholders should be put forward to carry out the course suggested, the expenses might fall upon them, and they would experience some difficulty in obtaining contributions from others of their class. I asked counsel how that could be met, and he recommends this, which we have here embodied as a resolution, "That with respect to the costs of the contemplated proceedings, this meeting recommends that the several committees should ask the court, through their respective counsel, that they should be paid by the company out of profits, and apportioned rateably among the several classes of shareholders." Should this be assented to, and as the company will not object, counsel believes it will be, the whole amount thus expended will be felt a little, and but a little by all. It is not at all likely, if the matter is properly gone into, that the costs will exceed £400 at the outside, which would not involve a deduction of more than 1s. per share upon all classes. The course recommended in this circular is, that Mr. Hinde, our secretary, shall summons each class of shareholders to meet separately, for the purpose of giving each an opportunity to select a small committee of the most intelligent and competent of their number to act for them in the matter. We also recommend that each of the committees should exercise extreme caution in the selection of solicitors; that they should be careful to appoint only men of great standing and experience, who will not endeavour to lead them into lengthened proceedings and make more of the case than is absolutely necessary. I need only say that both committees and solicitors will have the utmost assistance at once in going into the matter; for in order to put it properly before counsel I took great care myself to go through our accounts and reports, so that at this moment every point of importance has been put forth, and I have directed our accountant to make out a further statement, which is the only account required to enable any person to completely master the case in all its bearings. Of course, it will be the duty of every solicitor employed to verify those accounts, and see that they do properly put forth the claims of the class he represents; but what we most deprecate is, that any course should be taken to raise a question of facts so as to make it necessary to refer the matter to a jury. We are quite sure that the committees to be appointed can themselves decide any question of fact much better than any twelve men that could be summoned for the purpose. I had almost omitted to say that, as our secretary would find great difficulty in selecting shareholders belonging exclusively to one class, counsel recommends that we shall summon to the respective meetings those who hold a preponderating number of shares in the several classes. These are the facts which we wished to lay before you, and I shall now be happy to hear the sentiments of the shareholders upon the subject.

After some conversation upon the question as to the respective rights of the holders of the different classes of shares—

Mr. GRAY said: Is there in the act of Parliament any ambiguity which leaves a doubt upon the minds of gentlemen present, that those who took the preference shares are entitled to the benefits which were promised would arise from them? I am not a holder of such shares myself, but I say that, if the act of Parliament is so clear as to give the red and blue shareholders a definite right to the dividend, for what purpose are we to go to the Court of Chancery?

The CHAIRMAN: The question really is not whether, supposing there is a profit in any half year sufficient to pay dividend among the preference shares—all the preference shareholders are entitled to have it divided among them—but whether, supposing in the time gone by no profits have been made, they have a right, subsequently, when greater profits are made, to say—"Pay us the arrears which we ought to have received before."

Mr. FIGGINS: If there is anyone present who supposes that I wish to deprive the preference shareholders of their 6 per cent. he is completely mistaken. They are entitled no doubt if we earn it, but the question is, whether they are entitled to arrears for the six or seven years when no dividend was paid at all. You have two classes of preference shares—one which you call parliamentary preference, and which your act says you must pay 6 per cent., even if you pay it out of capital. (No, no.) Yes; they are guaranteed shares. But these red and blue are quite of a different character, because appended to them is an ultimate advantage, in the option, if the company pays more than 6 per cent., of converting them into stock.

After some further conversation, in which Dr. Dundas, Mr. Hands, and other proprietors took part—

Mr. BRATT said, I think this subject should be approached with tenderness to the opposite parties. The holders of the blue shares have been perfectly quiet for several years past, notwithstanding that profits have been made, because they saw that the necessities of the company required the expenditure of those profits upon extensions. They might have said, "We are entitled to these profits, and therefore divide them amongst us;" but they stood still rather than quarrel. The company at present are more favourably circumstanced, and on the part of certain black shareholders, the rights of these preference holders to arrears are called in question. If you decide to-day that they are entitled, where is the money to come from to pay them? The company is not in a position to pay them. Can you ask them to wait for their money? The profits which you would thus say ought to be divided, have been already spent in extending the works. I hope, therefore, the holders of black shares will meet the question in the same spirit that the red and blue have done; and then, I have no doubt, it will soon be amicably settled. I am quite satisfied that the blue and red shareholders, if their rights were acknowledged, are quite willing for the company to have the use of their money for some time yet to come. That is my opinion. I may be wrong; but I wish, at all events, that the question may be approached in a friendly and kind spirit.

Mr. FIGGINS: Is there no mode of compromising the matter by capitalising the arrears?

The CHAIRMAN: We cannot determine upon any course without the assent of all parties, or we should still be open to a Chancery suit with the dissentients. It is very much the wish of the directors that the moment the rights are ascertained, we should make a compromise in this way; but it would be necessary to go to Parliament to enable us to do it. I think Parliament would grant us permission to capitalise these arrears, although I have been informed that it is not absolutely certain. Supposing it should be settled that no arrears are due to the blue and red shareholders, we should immediately pay the 6 per cent. upon those classes out of present profits, and some small dividend upon the black. If, on the contrary, it is held that they are due, it would defer any payment to the red until after all the arrears upon the blue are paid up; and that would take some years. It would, of course, be still longer before the holders of the black shares got anything. What we should therefore propose, in that case, would be, that the whole of the arrears so due should be converted into stock; that the arrears owing to the blue should be a stock standing *pari passu* with the blue shares, and having the same preference over the red; that the stock from the red should stand *pari passu* with the red, so that holders of that stock would also receive their dividends with the same sort of regularity. Each class of shareholders would immediately receive in stock the payment of the whole of the arrears due to them; and it would have the effect of enabling the black shareholders immediately to receive something.

Mr. FIGGINS: I think if we get the committees formed we can do without the lawyers. (Hear, hear.)

Capt. MOORE: Could not this question be settled by arbitration, instead of by going to law, which is a most dangerous proceeding?

Mr. GRAY: I have listened with great attention to what has transpired, but nothing that I have heard has struck me so forcibly as the remarks of Mr. Bratt. I am confirmed in my opinion that the preference shareholders should be paid in full; but if you can come to some arrangement with them it would be far more beneficial than going into the Court of Chancery. Once there you will not be able to retreat so easily as you could wish. I hope we shall look at the matter fairly and in a proper spirit.

Capt. MOORE: Perhaps the chairman would put the question to the black shareholders to have the matter settled by arbitration.

The CHAIRMAN: I should say with regard to this point that everyone who has had much experience in arbitrations would prefer going into court, which would be the least expensive process. Every arbitration that we have had has cost us infinitely more than if the question at issue had been decided in court. The course which first suggested itself to us was, that we should get the consent of the shareholders to be bound by the decision of one, two, or three eminent counsel; but, as I stated, we found that that would be impossible, as many of the shareholders are trustees, and in all companies there are some impracticable men who will abide by nothing.

Mr. PIDGEON: If the proprietors of red and blue shares would come forward and say they would consent to have such arrears of dividend as have been actually made each half year capitalised—say the blue 4 per cent., and the red 2 per cent., the question could be settled without the intervention of the Court of Chancery.

The CHAIRMAN: How do you propose to bind them?—There's the difficulty.

Mr. PIDGEON: Would it not be possible to obtain the assent of each party?

The CHAIRMAN: We fear not; we are most anxious to do it—it was the first course which suggested itself, but we believe it to be impracticable. Looking over the list of shareholders I found no less than fifty who are in the capacity of trustees.

Mr. COX: I believe it is impossible for trustees to agree to anything of the kind; if they did it would be competent for those on whose behalf they act to involve them in a hostile suit. I think the only course is the one suggested by the chairman, it will bind all the trustees, and I believe if it is conducted in an amicable way it will cost us less than he has stated.

Mr. FIGGINS: What objections have the directors to capitalising these arrears?

The CHAIRMAN: We wish to do it.

Mr. FIGGINS: Would Lord Redesdale agree to it?

The CHAIRMAN: He, perhaps, would say, you are capitalising arrears before the question has been settled whether the parties are entitled to them.

Mr. CRADDOCK: In the case of the Great Northern Railway, Lord Redesdale did raise the doubt in reference to the frauds committed by Redpath.

Mr. GIBBON: No opinion of counsel has been taken as to the rights of the red and blue shareholders. All that the case submitted involved was the question as to the best way of taking the matter into the court.

The CHAIRMAN: Perhaps I ought to state that in a case which has been decided it was held that the preference holders were entitled to arrears; but Lord Justice Turner threw out a dictum which rather countenances the opinion of our black shareholders.

Mr. FIGGINS: Was that the case of the Leeds Northern?

The CHAIRMAN: No; the case of Sturge *v.* the Eastern Union. In our case the whole battle will be between the blue and black, and there the questions are perfectly distinct, which is not so with the red.

Capt. MOORE: Do the red preference shareholders agree to the blue having their arrears of dividend paid? Is it only the black that we are at war with?

The CHAIRMAN: The words used in creating the red preference shares were the same as the blue; therefore, as far as the legal rights go, they stand on the same ground. But they do not stand on the same ground with regard to their interest, and the payment of their arrears will have to be deferred until after all the arrears upon the blue are paid. The court, however, will only have to decide the legal rights, and not the interests.

Mr. DOWNES: I fear there is no means of settling the matter, except by a friendly suit, and, therefore, I am very glad you have modified the proposal in the circular, so that the directors will stand independent of either class.

The CHAIRMAN then moved the first resolution, as given above, which was seconded by Mr. MONTEFIORE, and carried unanimously.

The next resolution was proposed by the CHAIRMAN and seconded by Mr. RHODES.

Mr. FIGGINS moved, as an amendment, to omit the word "principally," but, after some conversation, agreed, on the recommendation of the chairman, to withdraw it.

The motion passed nearly unanimously.

The CHAIRMAN proposed and Mr. GRAY seconded the next resolution, which was adopted.

After some conversation on matters of detail respecting the appointment and functions of the committees of shareholders, a cordial vote of thanks was passed to the governor, deputy-governor, and board of directors.

The CHAIRMAN acknowledged the compliment, and proposed a vote of thanks to the auditors, which was adopted.

A vote of thanks to the engineer for his great economy and care in conducting the works closed the proceedings, and the meeting separated.

GREAT CENTRAL GAS CONSUMERS' COMPANY.

The Half-Yearly Meeting of this Company was held at the London Tavern, on Friday evening last, the 24th instant—Mr. Deputy DAKIN in the chair.

The SECRETARY (Mr. Massey) read the advertisement convening the meeting, and the register of proprietors was formally sealed.

The CHAIRMAN then read the following report of the directors:—

The yearly accounts of the company up to the 31st of December last have been prepared and printed, and, after having been duly audited and certified by the professional gentlemen appointed by the Corporation of London, are now in the hands of each proprietor, by which the financial position of the company may be ascertained. The directors, in calling the attention of the shareholders to the revenue account for the past year, have to congratulate the proprietors on so satisfactory and prosperous a statement. The rental for the year ending Christmas last amounts to £54,228. 7s. 4d., being an increase of more than £5800 over the preceding year, and £8240 over the twelve months ending Christmas, 1854. This increase raises the net profits to £16,802. 13s. 4d., a result your directors trust the proprietors will consider highly satisfactory, as well as showing that an earnest and careful management of the affairs of the company has been observed. From the results of the present quarter's accounts, so far as they have been made up, your directors have pleasure in stating that the marked increase exhibited in the past year will be fully maintained, if not considerably increased. The balance brought forward is £15,259. 19s. By deducting the depreciation-fund as settled for the four years ending December 31, 1856, from the gross profits of £15,259. 19s., £10,459. 19s. will be left for the purpose of paying the usual half-yearly dividend, after deducting all working expenses, interest on debentures, &c.; and out of which your directors recommend that a dividend at the rate of 8 per cent. per annum, free of income-tax, be now declared, and paid to those proprietors whose names stood on the company's books on the 15th instant. This will absorb £6919. 13s. 7d., leaving a balance of £3540. 5s. 5d. to be carried over to the credit of the next half year's account. The report of Dr. Letheby, the officer of health for the City of London appointed to test the quality and illuminating power of the gas supplied by this company to the citizens, proves that, whilst the shareholders continue to receive a liberal dividend on their capital, the consumers receive their gas, both as to purity and illuminating power, far beyond the standard provided by the company's act of incorporation—viz., 23 per cent.

Four of your directors, Messrs. Dakin, Gabriel, Bennoch, and Warren, retire by rotation, in accordance with the provisions of the Company's Clauses' Consolidation Act, and, being eligible for re-election, offer themselves accordingly.

The annexed statements of accounts were taken as read.

Dr. BALANCE-SHEET, DECEMBER 31, 1856. *Cr.*

To capital paid up	£150,000	0	0	By cash at bankers, viz.:—			
Do. new shares	12,180	0	0	General account	£11,926	6	2
	£162,180	0	0	Dividend and debenture—interest accounts	232	19	10
Premiums	29	4	0		£12,159	6	0
Creditors on debentures	66,000	0	0	Stock (pipes, bends, branches, tubing, &c.)	2,283	16	3
Creditors on bills payable	£ 6,808	0	0	Gas rents and arrears for the quarter ending December 31, 1856	26,279	8	3
Creditors	14,176	5	10	Sundry debtors	794	2	8
	20,984	5	10	Land, works, plant, mains, meters, services, &c.	£203,353	18	7
Dividends unclaimed to date	232	18	9	Preliminary expenses	20,602	14	7
Interest on debentures	1,540	1	1	Office furniture and fixtures	753	2	4
Revenue account, for balance to date	15,259	19	0		224,709	15	6
	£266,226	8	8		£266,226	8	8

Dr. REVENUE ACCOUNT, FROM DECEMBER 31, 1855, TO DECEMBER 31, 1856. *Cr.*

To cost of gas, for the year ending December 31, 1856	£25,466	15	3	By gas supplied to consumers and public lights, for the year ending December 31, 1856	£54,328	7	4
Interest	£ 90	11	1	Transfer fees	24	5	0
Interest on debentures	3,281	4	10				
	3,371	15	11				
Directors	£1,000	0	0				
Chemical referees	130	8	4				
Official auditors	43	5	6				
Corporation inspector	100	0	0				
Do., meter testing, &c.	15	3	0				
Solicitors' charges	76	18	4				
Salaries	1,623	2	10				
Trade charges	1,226	1	6				
Stationery	298	12	11				
Wages	1,161	9	11				
Meter fixing and paving	468	10	3				
Rent, rates, and taxes	1,672	14	7				
Bad debts and allowances	795	0	8				
	8,611	7	10				
	£37,449	19	0				
Balance, being net profit carried down	16,802	13	4				
	£54,252	12	4		£54,252	12	4
Dividend declared April 25, 1856	£6,000	0	0	Balance brought down	£16,802	13	4
Dividend declared October 31, 1856	6,482	2	11	Balance brought from last revenue account, as per official auditors' statement	10,939	8	7
Balance carried down	15,259	19	0				
	£27,742	1	11		£27,742	1	11
				Balance brought down, being the amount available for dividend	£15,259	19	0

The CHAIRMAN: Gentlemen, that is the report of the directors; and I am much gratified to find, by your expressions of approval, that the results of the last half year's operations of the company are as satisfactory to you as they are to us. It is much more gratifying to me, I assure you, to occupy the chair this evening, and to present to you so successful a balance-sheet, than it has been on some recent occasions when I have met the shareholders here. I do not know that I have much to say with regard either to the balance-sheet or to the report, but perhaps I may make one or two remarks which will be interesting to you. There is one item on the debit side of the balance-sheet which I should like to say a word in explanation of. There it appears as though there was actually due to creditors the sum of £14,176. 5s. 10d. when the accounts were made up. You will find, however, on the credit side, that the balance at the bankers at the same period was £11,926. 6s. 2d. The apparently large sum due to creditors, therefore, does not properly represent the liabilities on that head, which were of course less, by the amount of money in the bankers' hands. The second remark that I shall make will have reference to that item to which shareholders naturally look with great interest and anxiety—viz., whether any, and what increase has taken place upon the capital account. On this balance-sheet it appears that the amount is £203,353, as compared with £202,031 last year, making a difference of £1322. That addition is entirely owing to the three following items—meters, £731. 16s. 7d.; mains, £96. 17s. 9d.; and services, £493. 19s. 1d., and is necessarily caused by the increase in our revenue. Those three items entirely explain the increase in the capital account of the company during the past year. The next point upon which I would remark is one which has indeed been referred to in the report, and that is the very gratifying increase in the rental of the company. (Hear, hear.) Standing last year as it did at £43,000, and now at £54,000, it must be, I am sure, highly satisfactory to you all, as indicating the prosperous condition of the business of the company. (Cheers.) There is also one other item to which I will allude, as I see my friend, Mr. Lulham, is present—for I dare say that he has observed it—and that is, that we have placed to the debit of the revenue account, £468. 10s. 3d., under the head of "meter-fixing and paving."

Mr. LULHAM: It should have been carried to capital account.

The CHAIRMAN: I beg to say that, under the arrangement with Mr. Croll, we have no power to go beyond the £1200 set aside for depreciation; so that in this matter of meter-fixing and paving, although it might have been carried to capital, yet as to some extent it is a charge of a temporary character, we have thought it most convenient to place it to revenue. Therefore, in addition to the good balance you have got, there is the additional charge of £468. 10s. for meter-fixing and paving during the past year, and I may remark that the bad debts and allowances are less now than they were on the former occasion. With regard to Dr. Letheby's report, the only drawback to it is the discovery by him of some accidental impurity in the gas which we supplied towards the end of the year, but which matter is now remedied. It is a very curious circumstance that the Dr., testing from the great main at the London Hospital, finds impurities which he does not find to exist when he tests it in Coleman Street, situated in the heart of the district where the gas is consumed. It is one of those exceptional cases for which we cannot account; but if it is really so, that where the gas is consumed the impurities are not discovered, the fact of their being detected at a distance is not of any very great moment. (Hear, hear.) Gentlemen, with regard to the part of the report—the important part which recommends that a dividend at the rate of 8 per cent., free of income tax, should be declared—I have no doubt that that will meet with the cordial approval of this meeting. It is a very handsome dividend, and if there is any fault at all about it, it is that in not recommending you to declare more, we are erring on the safe side. We know the present, but we cannot say what will be the future. That sum deducted from the amount brought down said to be available for dividend, viz., £15,259—and I will make a remark upon it, seeing that Mr. Kerry is here—deducting £4800, all we are allowed to deduct; though I agree with Mr. Lulham, it would be well if it were larger—will leave £10,459 available for dividend. The proposed dividend will absorb £6919. 13s. 7d., and leave a balance of £3540. 5s. 5d. to be be carried over to the next year's account. (Hear, hear.) I may mention that since we met no further communication has taken place between this company and any other, and that we are now progressing in our own way, with all the energy we can command, and, I think, with all the success we could expect. (Cheers.) I may mention, likewise, that our contract with the new contractor is legal and binding; that we are perfecting arrangements which are now in progress, and the directors have every reason to believe that the future supply of gas to the their customers will be equally satisfactory with the past. (Hear, hear.) Mr. Kerry

has done me the kindness to write me a note on the subject of the depreciation-fund, and I may say that I fully enter into the spirit which dictated that communication. In reference to this subject, I may say that the auditors appointed by the Corporation of the City of London are very strict and rigid in their audit, and thus far it is satisfactory to us who have charge of the affairs of the company; and it must be equally satisfactory to you, for by it you may feel assured that all we divide is honestly earned, and properly divisible. (Hear, hear.) But these gentlemen, in their rigidness, have refused to recognise your depreciation-fund. I differ with them entirely in their construction of our act of Parliament; for their interpretation of it is so strict, that they say you have no power out of present earnings to provide for the sustentation of your works hereafter. In other words, you may go on for twenty years, till your works are so deteriorated that it would take 25 per cent. of your earnings to replace them, and then you must stop all dividends till you have reinstated them. (A voice—"Then they are a set of fools.") With regard to that, I will read you the clause in the act of Parliament, which happens to be one of those through which, as is sometimes said, a coach and four may be driven; but our auditors preferring to err on the right side, interpret it in the strictest manner possible. I have had a long conversation with them on the point, and have endeavoured to get them to show in the accounts what sum there is available for dividend, after deducting the amount for depreciation, which you, yourselves, have decided upon allowing; but they will not do it. This is the clause in the act:—"That, if the clear profit shall in any year amount to a larger sum than is sufficient, after making good the deficiency in the dividends of any previous year or years as aforesaid, to make a dividend at the rate of £10 in the hundred, the excess beyond the sum necessary for such purpose shall not be invested and form a reserve-fund, as in the 'Gas-Works Clauses Act, 1847,' directed, but shall be applied in making a proportionate reduction in the price to be thenceforth charged by the company for the gas supplied by them, and so from time to time, until the price charged for such gas supplied by them shall have been reduced to 3s. per 1000 cubic feet; and when and as soon as the price charged by the company for gas supplied by them shall have been reduced to 3s. per 1000 cubic feet, the excess beyond the sum necessary for the purpose of making a dividend at the rate of £10 in the hundred shall be applied in the manner directed by the 'Gas-Works Clauses Act.'" Now, these gentlemen read this clause, and, I am speaking in the presence of our solicitor, as if you were to appropriate the whole sum you earn, and to neglect altogether all provision for possible depreciation and deterioration of your works. I say that, whatever the strict verbal reading of the clause may be, it never could be the intention of the legislature that that course should be adopted. (Hear, hear.) If Mr. Kerry has any observations to make, I am sure we shall all be glad to hear them; for the directors would much like to be fortified with the opinions of the shareholders, in order to have another interview with the auditors. Should we not then succeed in overcoming their scruples on this point, we may hereafter seek that legislative remedy which is absolutely necessary. With these remarks I move—"That the report now read be received and adopted." (Cheers.)

Mr. KERRY: I may perhaps make a few observations upon the question to which you, sir, have referred. I quite believe what you have said as to the ability and capacity of the auditors; for I am bound to say that I never in all my experience saw accounts more explicitly stated, more readable, and understandable, than ours are. But it seems to me to be a monstrous anomaly that at the foot of this balance-sheet you should state "Balance brought down, being the amount available for dividend, £15,259," and then you tell us afterwards that it is £4800 less. This clearly is wrong, to all intents and purposes. I am quite sure that you are correct in saying that it is necessary to write off something every year for depreciation. I do not, of course, not being an engineer, understand these matters accurately, but it seems to me that every year your mains and pipes must become deteriorated, and it is perfectly clear, that before you can ascertain the actual profits applicable for dividends, you must set apart a certain sum to meet that depreciation. I understand that gas pipes do in course of time wear out, and if me may judge from the specimens exhibited at a recent meeting, they become perforated and drilled into a thousand holes; but whether that is so or not, it is very certain that in the course of a few years they do require to be renewed. Therefore, I say, that as mains and pipes do not preserve the same actual value from year to year, it is absurd to assume in your balance-sheet that they do. (Hear, hear.) As I have invested 9d. or a shilling in the purchase of our act of Parliament, I have possessed myself of all the information it contains, and looking at the terms there employed, I think our auditors do not sufficiently distinguish between a reserve-fund and a depreciation-fund, and I think it is the former which it is intended to prohibit in the act. I could give instances, which have come under my knowledge, in which one of your auditors has examined and audited accounts; and I know that he invariably sets apart a sum for depreciation of lease or of machinery, before arriving at what he considers the clear profits of a concern. Of course the gist of the whole matter lies entirely on those words "clear profit;" and I say we have no business to deal with the balance as clear profit until we have made a deduction equivalent to the deterioration of the works. (Hear, hear.) I think there is a great distinction to be drawn between a reserve-fund and a depreciation-fund; the one is to provide for future contingencies, the other to liquidate expenses past and gone. But I object to a fund at all; and I think the proper way would be not to bring it forward from year to year, but to put a value on the mains and pipes, and depreciate them at once. We should not then want a fund, and should thus get away from the difficulty in the act of Parliament entirely. I can see clearly that we have no right to a reserve-fund for the purpose of providing for contingencies; but this is a matter altogether different. I should be glad to hear what my brother shareholders have to say upon the point, and then I would submit a simple resolution; because it must come from the shareholders and not the directors. Let the auditors take counsel's opinion upon it, if they see fit; but I think there will scarcely be one gentleman present who, if he had invested capital in a lease or the purchase of machinery, would assume that his net profits were so much, until he had set aside a sum out of them to replace the one or renew the other.

The CHAIRMAN: Will Mr. Kerry allow me to suggest that if he would move a resolution expressive of the desire of the shareholders that the directors should again confer with the auditors, it would be the most convenient course, and we could act on that footing. If so armed with your authority we could make a formal application to them, and try once more to obtain what we all feel to be necessary. We have already tried with them to sanction the plan of at once writing off for depreciation of plant, but that they have refused to do.

On the question being put,

Mr. LULHAM said: What is printed in the report, Mr. Chairman, I do not find fault with; but I confess I should like to have heard some account of the state of the works and plant at Bow Common. Some two or three years ago I suggested the propriety of the works being examined by a practical gas engineer, and that the directors should report to the proprietors twice a year as to their condition. I have heard it stated from gentlemen who have paid a visit to all the metropolitan gas companies, that the Great Central Gas-Works are in the worst and most inefficient state of any works in the metropolis. I believe they are in a very dirty and filthy state; and no one can deny that, if they look at them. You may say that I ought not to cry stinking fish, being a shareholder in the company; but I think, on the other hand, that I am bound to state the facts for the preservation of the property in which I have a share. (Hear, hear.) The motion which I submitted on one occasion, and to which I have just referred, was negatived by a large majority, because the proprietors were frightened by the remarks made by the chairman as to——

The CHAIRMAN: Not by me; I rather encouraged the motion.

Mr. LULHAM: Well then, by others, as to the enormous expense it would be annually to have surveyors to look over our works. I do think, however, that it is highly necessary, and particularly at the present time, as your contract with Mr. Croll has nearly terminated, that we should have a competent surveyor to go over them; and I think, too, it would have been well if some reference had been made to the matter in the report, so as to satisfy many fastidious shareholders like myself. I know that I do not stand alone in this wish; and I am satisfied that there is an amount of deterioration there which ought to be looked at most minutely, and that too at once. When I brought forward my proposition before, to have the works inspected, I was told by the directors—"We go there every week ourselves, and look over the place." My answer to that is—No doubt you are diligent in looking after our affairs, but then you are not gas engineers. What I wish you to do, and what I think it is to our interest to do, is to have the works examined, and their condition certified by a practical man, and a report made by the directors as to their condition, and the amount required to put them into as good a state as when Mr. Croll took them. (Hear, hear.)

The CHAIRMAN: I ask the hon. proprietor's pardon, but I ought to have alluded to that subject, for the directors have anticipated his wishes. (Hear, hear.) Two months ago they appointed a gentleman, who is one of the most eminent engineers of the day, known I dare say to Mr. Lulham, as he is to most scientific men—I mean Mr. Hawksley—(hear, hear)—a gentleman who is accustomed to the erection of works, and the survey of works, and the valuation of works, and they directed him to make a survey of our works as they now stand, and to report upon the nature and extent of any depreciation of them, and upon the time that would be absolutely necessary for putting them into a full state of repair, to meet the exigencies of the ensuing winter. (Hear, hear.) I regret to say that Mr. Hawksley has been delayed by illness, and the necessity of visiting Manchester and Liverpool; but we have had an interview with him this day; he had been to the works, and he came to us with Mr. Anderson, who you know was employed in the erection of the works. They have got the inventory, and we went through it with our solicitor, and were engaged I dare say two hours upon it; so that the proprietors may be quite sure that every precaution is being taken by us to see that the works are put into proper condition. (Hear, hear.)

Mr. R. A. GRAY: Has Mr. Hawksley conveyed any intimation as to the amount of depreciation at the works?

The CHAIRMAN: He has not done so; the survey is as yet only in progress.

Mr. LULHAM: That is not, as I think, sufficient; we ought to have the report here, and not have to stop so long as the period when we shall be here again. Before six months are passed Mr. Croll's contract will be out, and what position shall we then be in? There is also another matter, and that is, as to the nuisance at the works. The doctors in the neighbourhood there find great fault about the "blue billy." I am very friendly with the medical officer, Dr. Ansell, and I begged of him, by all means, to keep as quiet as possible until the expiration of Mr. Croll's term; and I assured him that the directors had felt it of the utmost importance to do all they could that the nuisance should be thoroughly abated then.

The CHAIRMAN: I beg to say that our secretary, and Mr. Croll, have been before the magistrates of the district to-day and have made arrangements for a temporary covering over of the pits to which the hon. proprietor alludes, and for conveying a shaft into the chimney, so that the nuisance will be abated. We are anxious not to go to a larger expenditure than necessary, seeing that a total change in the mode of purification will have to take place. I believe the oxide of iron is now generally adopted; it is very efficacious and very cleanly, and is not much more expensive than the former mode. (Hear, hear.) The directors have carefully looked at the matter, and I hope the proprietors will have confidence in us, that in these, and all other matters, their interests will be watched over.

The motion was then put, and carried unanimously.

Mr. KERRY rose to submit a motion on the subject of the accounts. He said, I think I have no further observations to make than those I have made, and therefore shall at once move:—"That, in the opinion of the shareholders of this company, the sum of £1200 per annum, at least, must be deducted from the cost value of the plant, services and meters belonging to the company before the annual clear profits of the concern can be ascertained, and they respectfully submit to the corporation officers that there is nothing in the act of Parliament regulating the operations of this company to prohibit the application of this prudent and judicious rule."

Mr. GRAY: I think the resolution proposed to you is one which is so reasonable and just that I have great pleasure in giving my support to it. I am quite satisfied that no property can be considered safe permanently unless you have a reserve-fund. My worthy friend the chairman has read the clause of the act of Parliament, which, as is too frequently the case, is so ambiguous that it is quite impossible to understand it. But I would suggest to my worthy friend, that even if the auditors do refuse to audit the accounts with this deduction, I would still write off so much for depreciation, and carry the net balance down, whether the auditors would sign them or not. I should do that to show the view that I took of it, and it would be for the auditors then to express their opinion either in approbation or disapprobation of it. Such a course if adopted would quite exonerate the directors from all blame; they would have discharged their duty, and upon the auditors, and not upon them, would rest the responsibility.

The CHAIRMAN: I beg leave to remark that the auditors, in the strict performance of their duty, print the balance-sheet and send it to the proprietors, and they submit it, under the act of Parliament, to the corporation. But the protest which we give to their mode of presenting the balance-sheet is this, that in our half-yearly account we give you the net sum available for dividend, after making the deduction. After the expression of opinion given by this meeting, I am sure my brother directors will feel with me, that it is our duty to take the opinion of counsel upon the matter, and so fortify ourselves with regard to the construction of the act of Parliament before seeing the auditors, and I hope we shall be able to succeed in convincing them that we are right.

The resolution was then put and carried.

Mr. HAYWARD: I have now the pleasure to move,—"That a dividend be declared for the half year ending the 31st December last, at the rate of eight

per cent. per annum, free of income tax, and that the same be paid on and after the 14th day of May next." It is a very great pleasure to me to propose that, and I am sure it will be equally gratifying to you to receive it as the result of your investment.

Mr. WILSON: I shall feel great pleasure in seconding that. Being one of the first who agitated in Bishopsgate Street for the establishment of this company—and looking round, I see very few here present who then took part in the matter—it is very gratifying to me to see the company brought into the state it is. (Hear, hear.) At the same time there is one point upon which I feel a little anxious as one of the agitators for cheap gas; and I want to call attention to it. We promised our customers when we commenced that they should have a further reduction, and seeing our large balance, and the great increase of our rental—viz., something like £6000 upon the corresponding period of last year—I want to know whether we could not allow two or three per cent. for cash to our customers; I think it would be an inducement to many. With these remarks, I second the motion.

The CHAIRMAN: I am afraid the question of a reduction in price is not yet ripe for discussion, for the shareholders have not received their 10 per cent. There was a compact binding upon both parties; and, while the consumers have their gas at as low a price as possible, the shareholders who have risked their capital in the undertaking, which at one time was rather a perilous one, should receive all the consideration due to them. (Hear, hear.)

The motion was then adopted.

Mr. LULHAM: I now rise to propose a resolution which I think need not be brought forward from year to year, and that is, that the sum of £1000 be given to the directors for their services for the year ending the 1st of January, 1857. In doing so, I will only just say that I hope the directors will let us know the report upon the state of the works prior to our meeting again. Let us have a special meeting and receive the information, because I think you will have some work for your depreciation-fund. (Hear, hear.) I do not think it will appear at all in your accounts after the surveyor has been over the works.

The CHAIRMAN: We must hope for the best and do the best. (Hear.)

The motion having been seconded by Mr. LOW,

Mr. KERRY said: I think it would be a very imprudent thing to give a fixed sum of £1000 to the directors, because some time or other they may divide only 2 per cent. among us.

The CHAIRMAN: I have made the remark, I think, before, that I think it is much more wholesome for the shareholders to keep in their own hands the remuneration of the directors. We receive it, I assure you, the more cordially and gratefully as coming from your spontaneous liberality, than as a mere matter of routine.

Mr. GRAY: It might be met by inserting the words in your resolution, "subject to revision."

The motion was unanimously adopted.

Mr. AUSTIN, in a few complimentary remarks, moved the re-election of the retiring directors, Messrs. Dakin, Bennoch, Gabriel, and Warren.

Mr. LUPTON seconded the motion, which was at once adopted.

Mr. BLAKE: I have attended very carefully to the manner in which the business has been conducted this evening, and I have gathered some information from the remarks made by various shareholders as to the future management of our affairs; but I am bound to say that no suggestion has fallen from any one present which I have not found that some one of the directors or the chairman had previously arrived at a conclusion upon; and I am persuaded that the board only require our support and backing, to give them that stability in the propriety of their own opinions and conclusions, and that weight with the auditors, that will enable them to put the balance-shee before us, on future occasions, in the manner that we believe to be correct and proper. (Hear, hear.) I am sure that there is not a commercial man among you who would not feel the importance in putting his own affairs, or of a company in which he may be a partner, honestly before himself, and who would not despise everything like concealment, or equivocation, or disguise; and, as we desire not to call a depreciation-fund a reserve-fund, but to keep it honestly for the purposes for which it is intended, there is no reason whatever for disguising the fact from our auditors. We know that in the course of twenty-five years the deterioration to our works will be so great, that it will take something like 25 per cent. of their value to put them into proper condition. If that be the case, and you cannot expend thousand by thousand in keeping them up, as you amass the money you must put it by, to use as occasion demands. A man must be destitute of sense if he supposes that, if you have that profit year by year, you must divide it, and leave yourselves, at the end of twenty-five years, utterly denuded of the means by which to make any profits at all. (Hear, hear.) I was very glad to hear the remarks which have been made upon this subject, though I felt quite sure that our chairman and his fellow-directors were fully alive to the importance of that and every other question that could affect the interests of the company. I do hope that he is not likely to listen to the voice of the syren, in the shape of a touter from any "British Bank." I do not wish to see his mind distracted with anything of the kind; but I hope to see him still preside over our affairs in the full possession of those vigorous faculties which he enjoys, and reaping his share of the benefits he assists us to secure. It is now my pleasing duty to propose to you what I am sure I shall have your hearty concurrence in, viz., a vote of thanks to the directors for the ability and zeal with which they have conducted the affairs of this company. (Hear.)

The motion, having been seconded, was carried unanimously.

The CHAIRMAN: Gentlemen, I feel deeply grateful for the manner in which my friend, Mr. Blake—who is one of my eloquent colleagues in the Common Council of this City—has spoken of my services. I did not relish his scathing remark about the British Bank—the subject is one from which one instinctively shrinks. I did, I know, from the slight approach of it the other day, and so I do now from the mention of it; but I know the kindness of my friend's intention in the allusion which he made. I do assure you that every year I meet the shareholders of this company, and recall the struggle and opposition through which we have passed, I feel that it is a reward for some years of my life spent in arduous service, when it was committed in a great measure to me to fight the battle of this company in the corporation, to receive the expression of your approval. My friend, Mr. Blake, knows what struggles I had in this case; and it is no small consolation to me to see the success which has crowned our efforts, and to see that you are so kind as to acknowledge them. I may say, for my brother directors and myself, that we do give every attention to the affairs of this company, for we know how important its prosperity is to you as shareholders, and how necessary its service is to the City of London. (Hear, hear.) Under this double sense of obligation we have, as I say, given our constant attention to your affairs; and, as the best return for your confidence, we shall continue to do so for the future. We beg most cordially to thank you.

Mr. GRAY: Have you any by-law interdicting any director from supplying goods to the company?

The CHAIRMAN: Our act of Parliament is the most efficient by-law; but, in addition to this, we have "the unwritten law," which is quite sufficient to regulate our conduct in this respect.

The proceedings then terminated.

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*** Country orders executed with care and despatch.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

WALTER MABON, Engineer,
ARDWICK IRON WORKS, FAIRFIELD STREET,
MANCHESTER,
Manufacturer of

IRON TANKS for Gasholders, Railway Stations, &c.

GASHOLDERS.—Extensive premises at Gorton, solely for the manufacture of Gasholders, and other heavy Wrought-Iron Structures.

GAS APPARATUS.—W. M. has an extensive assortment of patterns for Purifiers from 4 feet to 15 feet square, also round ones from 4 feet to 10 feet diameter; Scrubbers, Condensers, Washers, Columns, Girders, and Tripod Patterns, suitable for Gasholders, from 10 feet to 150 feet diameter, either Single-lift or Telescope. Contractor for Gas Works of any Magnitude. Designs, Specifications, and Estimates furnished.

WROUGHT and CAST IRON ROOFS for Railway Stations, Gas Works, Warehouses, and Sheds, prepared for Slates or for Corrugated Iron.

IRON HOUSES, either for Dwellings, Manufactories, or Public Buildings.

PIPES and VALVES, for Gas and Water, from 2 inches to 48 inches bore.

WHITEHOUSE and CO.,
GLOBE PATENT TUBE WORKS,
WEDNESBURY,

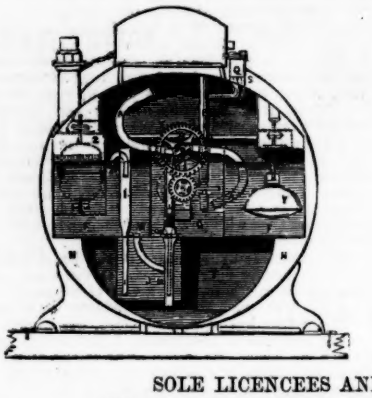
Beg to draw the attention of Engineers and Managers of Gas Works to the superior quality of the Article they manufacture, both in respect of the iron employed, and the perfect manner in which it is welded; in proof of which they can refer to the testimonials of the most eminent Gas Engineers, and the experience of the principal of the large Gas Companies of the kingdom.

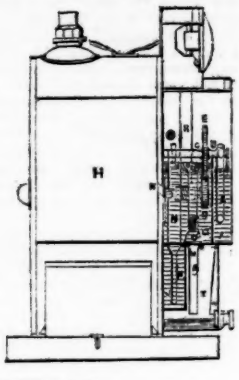
Orders promptly executed.

CROSLEY & CO.,

GAS-METER MANUFACTURERS,

103, SOUTHWARK BRIDGE ROAD, LONDON.





SOLE LICENCEES AND MANUFACTURERS OF

W. CROSLEY'S AND CROSLEY AND GOLDSMITH'S

PATENT STANDARD SELF-ADJUSTING AND COMPENSATING GAS-METERS,

By which the True Water-Line is constantly maintained, and accuracy of measurement at all times secured.

Manufacturers of LOWE'S PATENT MOTIVE-POWER METER, for situations where there is an inadequacy of pressure to supply the special requirements of certain consumers in low grounds during the day or night.

Also, Manufacturers of EXPERIMENTAL METERS, GASHOLDERS, GOVERNORS, MINUTE-CLOCKS, PHOTOMETERS, &c. &c., similar to those used by Mr. King, of Liverpool.

C. and Co. continue to manufacture ordinary WET METERS of the very best description, Mr. W. Crosley having been for many years the principal and confidential assistant of his relative, the late Mr. Samuel Crosley, of Cottage Lane, City Road, up to the time of his decease, in which capacity he communicated to W. C. the secret of the mixture of the metals which has rendered the Crosley Meter so durable and superior to all others, as is evidenced by a large number of them being still at work, after having stood the test of nearly a quarter of a century's use.

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

O. BROTHERS AND COMPANY,

MANUFACTURERS OF PATENT CARBONACEOUS CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

TO GAS COMPANIES, GAS PROPRIETORS, AND GAS ENGINEERS.

JOHN VICKARY

begs to call the attention of the above to his improved METALLIC CASE GAS-METER, an improvement which has met with entire approbation from the various Gas Companies and Engineers to whom he has introduced it, and acknowledged to be the greatest improvement that has been made since the year 1832; at which period a metal was introduced for the construction of the Drum, Syphon, and Float, capable of resisting any impurities arising from either gas or water, which has been found to answer every expectation; as, in repair, Drums of the above date are found in perfect and good condition, when the Outer Case, Valve-box, Inlet-pipe, &c., are quite destroyed and entirely past repair.

J. V. has introduced a coating or lining of the above metal in the Outer Case, Valve-box, Inlet-pipe, &c., thereby rendering the whole as durable as the Drum, as not a particle of tin plate is exposed to the action of either water or gas; and preventing the possibility of gas passing above the water line through the front into the body of the Case to the outlet unregistered, which frequently occurs. When the Meter has been in use for any length of time it is generally found that rust or decay takes place *above* rather than under the water line, which is only discovered when they need repair. Also the Inlet-pipe and Valve-box are generally found quite decayed, which cannot happen in the above improvement.

J. V. feels confident that the above will be found a most desirable and perfect instrument, as it contains all other improvements of utility that have been introduced up to the present time.

The most strict attention is given to the workmanship as well as the registration of every Meter, to render them perfectly accurate.

Station Meters, Governors, &c., made on the shortest notice, as well as Gas Cooking Apparatus of every description, Gas Baths, &c.

Meters sent at the lowest London prices.

Carriage paid to any part of England.

WEST OF ENGLAND GAS METER AND GENERAL GAS APPARATUS MANUFACTORY, 84, FORE STREET, EXETER.

BOYLE'S PATENT SILVERED

GLASS REFLECTORS

are the most durable, and are cheaper and better than any other.

HULETT and CO., Sole Agents,

Patentees of the only really good

MERCURIAL GAS REGULATOR,

55 and 56, HIGH HOLBORN, LONDON.

RETORT AND BOILER SETTING.

FREDERICK SIMMONDS, Sen.,

No. 19, YORK STREET NORTH, HACKNEY ROAD.

Thirty years RETORT SETTER to some of the leading London and Provincial Gas Companies, to whom he can refer, begs leave to draw attention to his economical mode of Setting Clay or Iron Retorts, &c.

F. S. will engage to provide all materials and labour, or labour only.

HARRIS AND PEARSON,

PROPRIETORS OF

BEST GLASS-HOUSE POT AND CRUCIBLE CLAY

MANUFACTURERS OF

FIRE BRICKS GAS RETORTS, &C.

AMBLECOTE FIRE CLAY AND BRICK WORKS,

STOURBRIDGE.

Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

CARTER'S PATENT SAFETY GAS VALVES.

THOMAS LAMBERT and SON,

PATENTEES AND MANUFACTURERS,

SHORT STREET, NEW CUT, BLACKFRIARS, LONDON.

The Bank of England is fitted entirely with these Valves, from the smallest branch to the largest main pipe.

The following, among numerous testimonials, will be found very satisfactory:—

"The British Gaslight Company's Office, No. 105, Broad-street, Ratcliff, London, June 10, 1846.

"Gentlemen,—In reply to your inquiry, I have to state that 'Carter's Patent Gas Valve' has been used by this company and by the fitters of the district extensively for seven years past. It was adopted to obviate the inconvenience of setting fast, so prevalent with the conical metal plug-cocks, and has been found to answer the purpose intended.

"I have recommended its use in several provincial towns with which I am professionally connected, and have not received any complaint of its having failed in any respect of performing satisfactorily all that is required of it.—I am, gentlemen, yours respectfully,

"GEDDIE PEARSE.

"Messrs. Lambert and Son, Lambeth."

METROPOLITAN BOARD OF WORKS.

The METROPOLITAN BOARD of WORKS hereby give NOTICE that they will, on or before the 1st day of July next, receive DESIGNS from Architects, Engineers, and others, showing the best mode of laying out the Surface and Subsoil of an intended New Street in Southwark, as an example of a First-class Street; and of an intended New Street between Cranbourne Street, Leicester Square, and King Street, Covent Garden, as an example of a Second-class Street; and showing any improved means of facilitating the Traffic, and the better disposition of the Private Vaults, Sewers, Drains, Gas and Water-Pipes, Telegraph Wires, &c., with such underground or surface arrangements as may be adapted to those and other useful purposes.

The following prizes will be given for those designs which shall be adjudged to possess the highest merit:—

FIRST-CLASS STREET.

First Prize	100 guineas
Second „	50 „
Third „	10 „

SECOND-CLASS STREET.

First Prize	50 guineas
Second „	25 „
Third „	5 „

The width of the First-class Street will be 70 feet, from front to front of the houses; and the level of the Invert of the Sewer at the junction of Stamford Street and Blackfriars Road will be 1·40 above Ordnance Datum; the Invert at Wellington Street, London Bridge, 0·75 above Ordnance Datum; and the Area of the Sewer, 14 superficial feet.

The lowest level of the Crown of the Road is to be 12·55 above Ordnance Datum. Length of Street, 1130 yards.

The width of the Second-class Street will be 50 feet from front to front of the houses; and the level of the Invert of the Sewer in St. Martin's Lane 50·69 above Ordnance Datum; the Invert of the Sewer in King Street, 57·32 above Ordnance Datum; and the Area of the Sewer, 8 superficial feet.

The lowest level of the Crown of the Road is to be 67·9 above Ordnance Datum. Length of Street, 135 yards.

It is an essential condition of a First-class Street, that it should contain facilities for the supply of Gas, Water, Telegraph, and Sewer Communications to the Houses on each side of the Street, and also Leading Mains for an entire surrounding District.

A Second class Street must contain facilities for the supply of Gas, Water, Telegraph, and Sewer Communications to the Houses on each side of the Street, without provisions for the surrounding District.

The Designs must be on Double Elephant Drawing-Paper, drawn to a scale of half an inch to a foot, and must comprise a Plan; a Longitudinal Section of a portion of the Street, taken down the centre; a Longitudinal Section near the line of the houses; and also a Transverse Section, with such descriptive details as can be shown on one sheet of Double Elephant Paper. The Drawings to be in line, and shaded (if and where necessary) in Indian Ink or Sepia only. No other drawings than those here described will be admitted to competition.

None of the Officers of the Board will be allowed to compete.

The Plans must embrace Service Connections of Gas and Water-Pipes, &c., and Surface Paving for Foot and Road-ways.

Provision must also be made for Surface Drainage, comprising Gullies, Channels, &c.

Every Design must be accompanied by an Estimate of the Cost per Lineal Yard for each class of Street.

Each design must be inscribed with a Motto, and be accompanied by a Sealed Envelope (inscribed with the same Motto) containing the name and address of the Competitor The Designs to which Prizes may be awarded will become the property of the Board.

It is proposed that the Designs shall be publicly exhibited after the decision, and the Board therefore reserve to themselves the power of retaining all Designs sent in for the purpose of such Exhibition.

Robert Stephenson, Esq., M.P., F.R.S., President of the Institute of Civil Engineers;
Thomas Hawksley, Esq., C.E.;
Thomas Henry Wyatt, Esq., F.R.I.B.A., A.C.E.; and
George Lowe, Esq., F.R.S., C.E.;
will be associated with a Committee, consisting of John Thwaites, Esq., Chairman of the Metropolitan Board of Works:
Alderman Cubitt, M.P.; and Alexander Wright, Esq., } Members of the Board;
assisted by the Engineer and Superintending Architect of the Board, for the purpose of deciding upon the merits of the Designs.

Should further information be required, it may be obtained on application to the Superintending Architect at this Office.

The Designs are to be sent to this Office on or before the 1st day of July next.

By order, E. H. WOOLRYCH,
Clerk of the Board.

Office of Metropolitan Board of Works,
1, Greek Street, Soho Square,
April 8, 1857.

LESMAHAGO GAS COAL.

JAMES FERGUSON and CO., Lessees of the Auchinheath and Craignethan Gas Coal-fields (the most extensive and valuable in the parish of Lesmahago), respectfully intimate to the Managers of Gas Works and Consumers of Gas Coal, that he is prepared to ship the best quality of the above well-known COALS at Glasgow or Leith; and also to deliver them at the railway stations upon, or connected with, the Caledonian Railway, to any extent which may be required.

Price, free on board, or delivered at the railway stations, may be learned by addressing James Ferguson and Co., Gas-Coal Works, Lesmahago; or J. H. Jones, 1, Poets'-corner, Westminster, sole Agent for London.

Shipping Agent for Glasgow:
MR. ALEXANDER STRATTON,
159, WEST GEORGE STREET.

WILLIAM PARKINSON AND CO.,

(Successors to the late Samuel Crosley),

COTTAGE LANE, CITY ROAD, LONDON,

Beg to announce that, in addition to the manufacture of GAS-METERS, they continue the manufacture of METERS for MEASURING WATER, SPIRITS, &c., commenced, under Patent in 1819, by the late Mr. William Parkinson.

These Meters are as simple and durable as the Gas-Meter, and as correct as that instrument in the registration of the fluids passing through them.

By Her Majesty's Royal Letters Patent.

JOSEPH BOULTON,

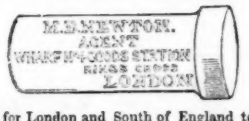
PATENT DRY GAS-METER MANUFACTURER, and also Maker of his Improved WATER METERS.

No. 28, BAGNIGGE-WELLS-ROAD, CLERKENWELL, adjoining the Police Office.—Late of No. 1, Coppice-row, LONDON.

Experimental and Station Meters of any size made to order on the shortest notice.—Governors, Pressure Registers, Gas-cooking Stoves, and every description of Gas Apparatus.

J. CLIFF'S

FIRE BRICKS, GAS RETORTS, &c.



Orders for London and South of England to be addressed to Mr. NEWTON, Agent for the District, Park House, Thornhill Road, ISLINGTON (N.).

N.B.—A few Retorts of each size, and a large stock of Bricks and Lumps, always on hand at the above Wharf.

THE CHEAPEST MANUFACTORY
IN THE TRADE FOR

CHANDELIERS and BRACKETS

IN GLASS, ORMOLU, & BRONZE.

OUTSIDE SHOP LANTERNS,

Lined with Patent Silvered Glass.

Wrought Iron, Composition, and Tin Tube,

WITH EVERY DESCRIPTION OF

GAS FITTINGS,

ALWAYS IN STOCK.

CHANDELIERS and FITTINGS
made to Order on the Shortest Notice.

JET MOONS, GLOBES, SAUCERS, & CHIMNEYS,

IN EVERY VARIETY, WHOLESALE AND FOR EXPORTATION.

HODGE and ROBERTS,

101, HATTON GARDEN, LONDON.

Pattern Books of Chandeliers, and also of all kinds of Gas Glasses, sent to any part of the Kingdom on application.

GEORGE CUTLER,

GASHOLDER MAKER,
No. 8, WENLOCK-ROAD, CITY-ROAD,
LONDON.

Contracts for Tanks, Gasholders, Roofs, Purifiers, and all descriptions of Gas Apparatus executed on the most reasonable terms. Improved Slide Valves, Steam, and Range Boilers, and Smiths' Work, of the best materials and workmanship.

S. & E. RANSOME & CO.,

31, ESSEX STREET, STRAND, LONDON (W.C.),

beg to call attention to their

GAS HEATING & COOKING STOVES

Price, from 18s. 6d. each, and upwards.

WHOLESALE AGENTS FOR

MEAD'S PATENT DRY GAS-REGULATORS,
GODDARD'S DUPLEX & ECONOMIC BURNERS,
GAS BATHS, HEATING COILS, TORCHES, &c.
Also,
GWYNNE'S STEAM-PRESSURE GAUGES,
and
JOHNSTON'S PATENT ALARM WHISTLES,
for preventing Explosions in Steam-Boilers.

Drawings and Prices sent on application.

NOTICE.—INFRINGEMENT OF PATENT.

CRICKMER'S Patent Metallic Packing for Steam-Engines, Pistons, Piston-Rod Stuffing-Boxes, Pumps, &c.—Notice is hereby given that a perpetual Injunction of the High Court of Chancery has been obtained by Messrs. OASTLER and PALMER, trading under the Firm of ALEX. ROSS and CO., Grange Mills, Bermondsey, against Messrs. LITTLE and CHAMBERS, of Manchester, to restrain them from further infringing the above Patent; and that the above Packing can only be obtained of Messrs. ALEX. ROSS and CO., Grange Mills, Bermondsey, LONDON (the Proprietors of the Patent), or by their authorised Agents.

MILL BANDS, HOSE PIPES, & FIRE BUCKETS made to order from the best-selected Oak-Bark Tanned Leather.

Prices Current to be had on application.

ROBERT MACLAREN & CO.,

EGLINTON FOUNDRY, GLASGOW,

Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

NOW READY,

VOL. V. of the JOURNAL of GAS LIGHTING, WATER SUPPLY, and SANITARY IMPROVEMENT, for 1856, price 21s., bound in cloth and lettered. A few copies of Vols. II., III., and IV. are still on sale.

W. B. KING, 11, Bolt Court, Fleet Street.

JAMES FEATHERSTONE,

ENGINEER,
Manufacturer of GASHOLDERS, IRON ROOFS, and every description of Gas Apparatus.
ALLIANCE IRON WORKS,
CLAYTON, near MANCHESTER.

JOHN BENT,

MANUFACTURER OF GAS METERS,
283, BELL BARN ROAD,
BIRMINGHAM,
(Established 1830),

Begs respectfully to call the attention of Gas Companies, Engineers, &c., to his WET GAS METER, made upon the most improved principles, the most admirable materials, and warranted to register correctly.

BIRTLEY IRON WORKS,

CHESTER-LE-STREET,
DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

JAMES PINCHBECK,

GAS METER MANUFACTURER,
26, CAMDEN-STREET, and 9, PIERREPOINT-ROW,
ISLINGTON, LONDON.

Begs respectfully to announce to Gas Companies and Fitters, that from upwards of 20 years' practical experience, he is enabled to supply a METER combining correctness, durability, and economy.

N.B.—Repairs on the lowest scale.

PATENT GAS METER MANUFACTORY,
No. 66, Snow-hill, London.

WILLIAM SMITH, by the improvements he has made in the Wet Meter, and which he has secured by her Majesty's Royal Letters Patent, the accuracy of their registry is rendered certain by the introduction of the adjusting slide and hydraulic, whereby a Perfect Water Level is readily obtained, and the Hydraulic precludes the possibility of abstracting water from the meter by increased pressure or otherwise, thus surmounting the great desideratum of the Wet Meter. In his Patent Equitable Gas Meter neatness and strength are combined, the backs and fronts of the case being stamped by powerful machinery out of thick plate iron (tinned or galvanized); and the internal construction is of the best metal, which will resist the action of any impurity in the gas.

Old Meters may readily have the adjusting slide and hydraulic applied, thereby having accurate measurement assured.

Station Meters, Governors, &c., made on the shortest notice.

J. JONES, Iron Merchant, 6, Bankside, has long been known to sell the following Castings at prices lower than any other house in London:—Socket and Flange Pipes, Bends, Branches and Tees, Syphons, Lamp-posts, Rain-water Pipes, &c.; also, Hot Water Pipes, Elbows, Tees, Cylindrical and Saddle Boilers, and every Fitting for the same. Drawings and Prices of the above on application to J. JONES, Iron Bridge Wharf, 6, BANKSIDE, near the Southwark Iron Bridge.

WEST and GREGSON,

GAS-METER MANUFACTURERS, &c.
UNION-STREET, OLDHAM.

Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.

W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

BRYAN, M'CRACKEN AND CO.,

3, INDIAN KING'S COURT,
NEWCASTLE-ON-TYNE.

Contracts made for all kinds of Cast and Wrought Iron Gas and Water Apparatus, Clay Retorts, Fire-Bricks, Coals, &c.—Prices, and Lists of Freights and Carriage sent on application.

ALEXANDER WRIGHT,

GAS ENGINEER, MANUFACTURER OF GAS-METERS, GOVERNORS, AND EVERY DESCRIPTION OF GAS APPARATUS,
55, MILLBANK STREET, WESTMINSTER.
CONSUMERS' METERS at the List Price, with a Liberal Discount to Wholesale Purchasers.
THOMPSON'S BROMINE TEST, £1. 1s.—BROMINE, 3s. per Ounce.
BISULPHURET OF CARBON TEST, £2. 2s.
APPARATUS FOR DETERMINING THE HEATING POWER OF SAMPLES OF COAL AND OTHER DESCRIPTIONS OF FUEL, £5. 5s.,
INVENTED BY LEWIS THOMPSON, Esq., M.R.C.S.
REGISTERING PRESSURE GAUGE, Net Price, £8. Glass Shade, 10s. extra.
STATION METERS, PRESSURE GAUGES, PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, &c.

FIRE-CLAY RETORTS.

JOHN SWARBRICK,

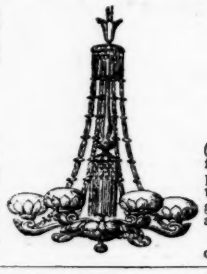
MANUFACTURER OF PATENT COMPOSITION CLAY RETORTS,
FIRE BRICKS OF EVERY DESCRIPTION, SHAPE, AND SIZE, &c. &c.
HIGHER EANAM, BLACKBURN, LANCASHIRE.

These RETORTS are generally used in the Gas-works of Preston, Accrington, Bury, Heywood, Middleton, Rochdale, Ratcliffe; the Mills of Messrs. Horrocks, Miller, and Co., Preston, &c. &c., and are unequalled in having afforded general satisfaction to those who have given these Retorts a trial.
To meet the increasing demand, the Works at Little Harwood have been greatly enlarged; and Gas Engineers who may favour with an Order may rely with confidence on their being promptly supplied with an article not to be surpassed in finish or durability.

PRICES MODERATE.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

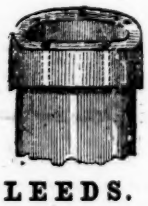
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including best cold-blast Iron Retorts, Socket and Flange Pipes of all sizes, Bends, Branches, Syphons, Lamp Columns of various patterns, &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.
C. H. is prepared to carry out the warming and ventilation of public buildings, &c.; also civil engineering in general.



F. & C. OSLER,
44, OXFORD STREET, LONDON;
Manufactory—Broad-street, Birmingham,
MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, FOR GAS

(Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.
THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

FIRE-CLAY GAS RETORTS.



ESTABLISHED IN 1795.

JOSEPH CLIFF,

WORTLEY FIRE-BRICK WORKS, near LEEDS.

THESE RETORTS are unrivalled in excellence, being the BEST FINISHED INTERNALLY, and THE MOST CORRECT IN FORM, of any in the Kingdom. From the peculiar composition used in working up the face of the material, they are rendered unusually smooth, close, and FREE FROM SURFACE CRACKS, thus, in a great measure, preventing leakage and the adhesion of carbon to their interior surface.
To meet the yearly increasing demand of UPWARDS OF THIRTY SEASONS and to carry out the late improvements in the manufacture, the Premises have been re-erected and much enlarged, and Engineers may rely WITH CONFIDENCE on their orders being completed with a greater regard to despatch than by any other House.

THE WORKS ARE WELL SITUATED

For EXPORT from the Ports of {**LONDON, LIVERPOOL, HULL, MIDDLESBRO', HARTLEPOOL, and STOCKTON.**

FIRE-BRICKS, LUMPS, GUARDS, TILES, AND CLAY, of the same quality.

M. B. NEWTON, London Agent, No. 4 Wharf, King's Cross Goods' Station.

HULETT AND CO., 55 AND 56, HIGH HOLBORN,

PATENTEES and MANUFACTURERS of the NATIONAL GAS METER,

Beg to inform the Proprietors of Gas Companies, and the Trade generally, that, having completed their new Gas-Meter Manufactory, they are now enabled to supply, with despatch, a very superior article, and can confidently warrant the same to be equal in quality and workmanship to any Gas-Meter ever made. Manufacturers of

GAS CHANDELIERS, GLASS LUSTRES, HALL LANTERNS, PILLARS, BRACKETS, PENDANTS,
AND EVERY ARTICLE CONNECTED WITH
GAS FITTINGS.
GAS COOKING APPARATUS, IMPROVED ALBERT,
AND EVERY DESCRIPTION OF
SHADOWLESS GAS BURNERS, UNION JETS, BATSWINGS, &c. &c.; CAST AND WROUGHT IRON PIPE; COPPER, TIN, BRASS, and COMPOSITION TUBING.

D. HULETT'S IMPROVED SERVICE CLEANSER,
by which Mains, Service Pipes, and the interior Fittings of a House, may be cleaned out in a few minutes. Price 60s. net.
Sole Manufacturers of Church and Mann's Improved Photometer.

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